GEOGRAPHY

UNITED STATES AND CANADA

BARROWS-PARKER

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Doris Schunke

GEOGRAPHY

UNITED STATES AND CANADA

BY

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THE POINT OF VIEW OF THIS SERIES OF GEOGRAPHIES

This series of geographies has been written with the conviction that it is the special function of geography to describe and explain the relationships existing between man and his natural environment. The material throughout the series has been selected and presented with a view to giving the pupils an understanding of such relationships, and to providing for purposeful activity on their part.

In keeping with a widespread demand among educators for the elimination of waste in the work in geography in the grades, most of the regions of the world are treated but once, and those of little import to the young citizens of America are subordinated appropriately. As a result, much space has been gained, and this has permitted a treatment of regions of large significance which is more extended and richer than otherwise would have been possible.

The first book of the series, *Journeys in Distant Lands*, deals with the life of representative peoples in selected environments throughout the world. The United States and Canada are considered in the second book, with emphasis on the United States. Eurasia is treated in the third book, while Latin America, Africa, and Australia are handled in the fourth and last book. The fourth book closes with a "world view" which stresses the commercial and political relations of the United States. This series of geographies will also appear in a two-volume edition.

The text is graded carefully with reference to difficulty of language and of ideas. The facts presented have been chosen with a view especially to developing and illustrating principles, and the pupil is led to apply the principles mastered in the earlier studies to the solution of later problems. Geographical terms are introduced only when needed and only after the underlying concepts have been made clear. No single method of presenting material has been followed, various methods having been employed as seemed most effective in particular cases. Whatever the method, the text systematically provides for supervised study. By means of varied exercises, definite goals are set up for the pupil to reach through the study of text, maps, and pictures, used singly or in some combination. Explicit directions for procedure in such studies are given, and means are provided by which the pupil can check his own conclusions. Review frequently is accomplished by the application of familiar principles to new situations, and, especially in the earlier units, liberal use is made of drill devices on the play level. Since from beginning to end the text deals with the relations of specific groups of people to their natural environments, the treatment throughout is regional in character.

The colored maps (except those in the appendices) are characterized especially by their simplicity; they are not intended to serve as general reference maps, and few or no names appear on them that do not func-

tion in the text discussion. Like the reading matter to which they are closely tied, the maps are progressive in character; the simpler ideas are developed very early, while such difficult matters as latitude and longitude are introduced only when needed at comparatively late stages. The novel treatment of the earlier maps, especially of the series of unlettered maps superimposed on the globe, was designed to develop, at the outset, correct habits of map reading and a real understanding of the size and form of the earth.

The pictures are restricted to views of real geographical quality and are an integral and vitally important part of the text rather than merely illustrative of it. Definite and varied provision is made for their use as a source of information, and captions are omitted in order that picture study really may accomplish the ends of field study, in so far as the nature of the case permits.

The materials of the first book are arranged and treated with a view to leading the child to develop a concept of the world as a whole, and to sense the relationships between distance from the equator and man's activities. At the outset, the child is more interested in remote lands than in his home surroundings; moreover, it is only after he views the life of other people in unfamiliar environments that he can consider effectively the relationship of his home life to the familiar local environment. The last section of the book is designed particularly to test the pupil's knowledge of basic principles developed in earlier sections, by requiring the application of these principles to lands not visited on the "journeys," and to give the pupil a glimpse of the opportunities awaiting him in the later books of the series.

In dealing with the homeland, the second book presents only those items in the geography of each part of the country which, because of their outstanding importance, should be known by its young citizens everywhere. Accordingly, although unique provision is made for a study of the home locality, wherever it may be, the distinctive field of the state or local geography is not invaded. In the discussion of the West the necessary transition is made from the ideas of general regions which were developed in the first book to those of "work regions" which underlie the organization of the material on the remainder of the United States. Urban geography receives unprecedented emphasis for an elementary text, an emphasis which is in keeping with the importance of the city in modern American life and with the fact that more than half the people of the country live in urban communities. The simple, basic geographical equipment provided in the first book is used systematically in the second volume, where the cumulative "carry over" reaches its climax in the treatment of Canada.

Many of the methods and nearly all of the materials in the books have been developed and tested during several years by the junior author, in the Laboratory Schools of the University of Chicago.

Harlan H. Barrows
Edith Putnam Parker

A MESSAGE TO EACH GIRL OR BOY WHO USES THIS BOOK

DEAR FRIEND:

In *Journeys in Distant Lands* we helped you to understand why people work and play and live in various far-away parts of the world in the ways they do. Did you not wonder as you read about these people why we ourselves do many things as we do? We have written this book to help you see *why people work and play and live as they do in your great homeland, the United States, and in the neighboring country of Canada.*

In the United States there are more than thirty-three million boys and girls under fourteen years of age. There are more than twice as many as there are people of all ages in Switzerland, the Netherlands, and Norway together. Had you realized that you belong to so vast an army of American boys and girls? Have you ever thought about the fact that many of these boys and girls of the United States lead lives very different from yours?

Of course, each of you has seen at least one part of the United States — the part in which you live. Your country, however, is so large that it includes more than one-eighteenth of all the land in the world. In it there are many districts as different from the one near your home and as interesting, too, as are the distant lands about which you have read. Even about your home locality the book doubtless will help you to discover facts you had not noticed or had not thought about before. We hope that you will enjoy "seeing" various parts of your own country even more than you did "visiting" foreign lands. Doubtless *actual* visits which you may make to any part of your country will be all the more interesting for your having first studied about all parts of it.

Just as in *Journeys in Distant Lands*, you will find no titles under the pictures. You doubtless have discovered by this time that you can have the fun of using pictures in more ways if the titles are not printed beneath them

than you could if they were. When you need to use any of the titles, you can find them in the List of Illustrations.

You will find suggestions for work and play, somewhat like those in *Journeys in Distant Lands*, which will be helpful guides. We think you will enjoy especially making maps and drawings, finding pictures, and keeping records of various sorts for your geography notebook. We hope this notebook will be useful to you many times long after you have completed this study of the United States and Canada.

Finally, we hope that, as you study, you will often think of the fact that learning the geography of your homeland and of Canada means learning *how the people in the different parts of these vast countries have made or can make their work and play and their ways of living fit the kind of region in which they dwell.*

Very sincerely yours,

Harlan H. Barrows

Edith Putnam Parker

THE CONTENTS OF THIS BOOK

	PAGE
Glimpses of the Land in Which You Live	1
Western United States	30
Between the Rocky Mountains and the Mississippi	75
Southeastern United States	135
Northeastern United States	172
United States Summary	238
Scattered American Lands	244
Canada	258
List of Illustrations	278
Books Suggested for Extra Reading	283
Index	284

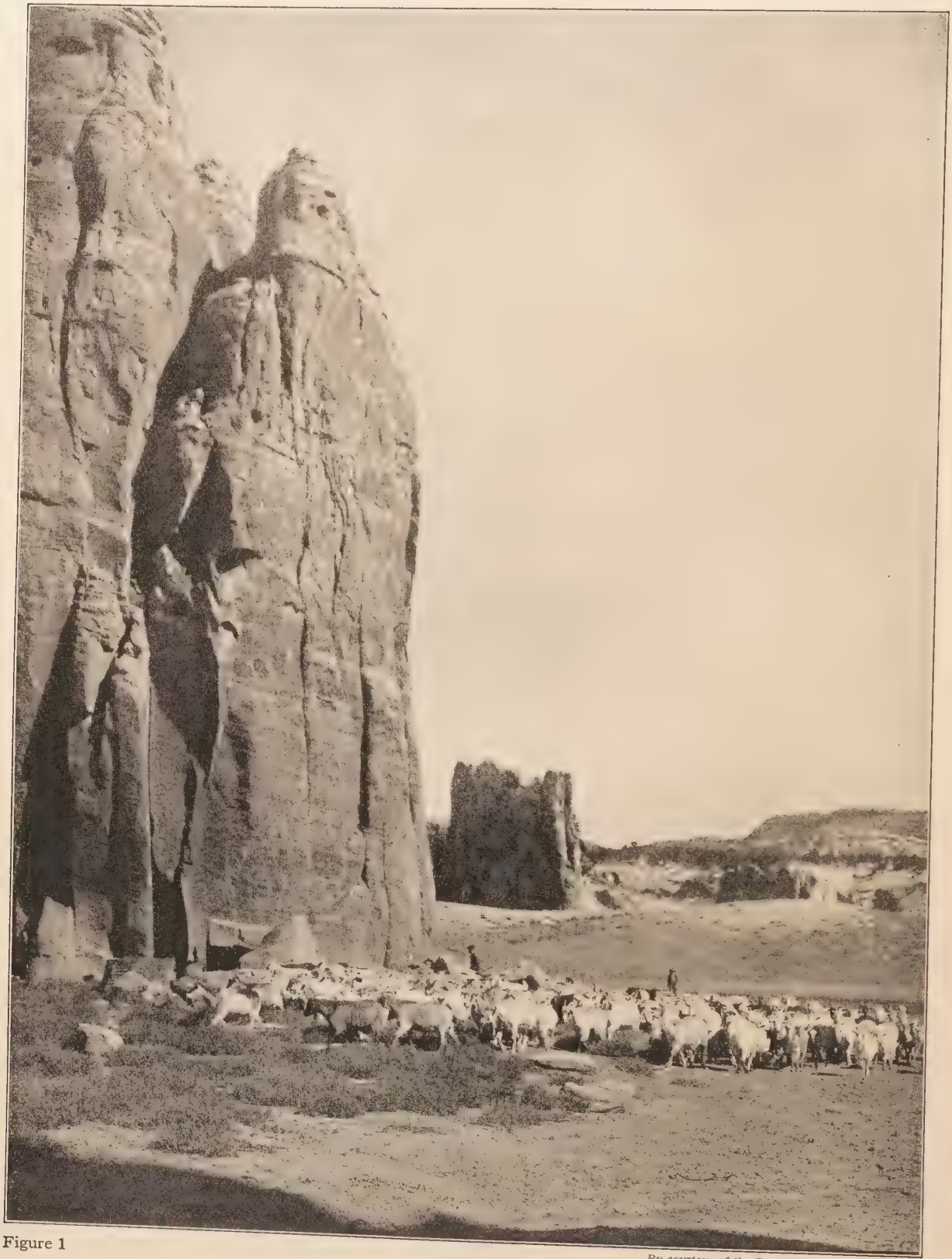


Figure 1

By courtesy of the Santa Fé Railroad Company

Figure 2

By courtesy of the Union Pacific System

UNITED STATES AND CANADA

THE UNITED STATES

GLIMPSES OF THE LAND IN WHICH YOU LIVE

A vast land of many lands. — Suppose that you were to invite the children with whom you became acquainted in *Journeys in Distant Lands* to come from their far-away homes to visit *your* country, the United States of America. You could plan to show each of them places in your own land that resemble his or her homeland. You could plan to take the children, for example, to the place in the United States shown in Figure 1. Does not this scene suggest to you one of the countries described in the journeys? Do you not think that the children from Mediterranean lands, and especially Demetra from Greece, would feel somewhat at home there? In Figures 115 and 116, in *Journeys in Distant Lands*, there are views taken in Greece which are much like this view. Find at least two things in Figure 1 which you think might well remind Demetra of her homeland.

You might plan to take the children, instead, to the place shown in Figure 2. Does it not remind you somewhat of another distant land? If so, which one? Which of the children do you think would feel most at home here — Jan or Cornelius from the Netherlands, Sulim from Egypt, Leandro, Francisca, Pepino, or Demetra from other Mediterranean lands, Gerda from Switzerland, Kanda from the Congo, or Ivar from Norway? Find at least three things in the picture which that child can see near its home.

What other part of the world does Figure 3 suggest to you? Figure 4? Figure 5? In each case tell which of the children you think would feel most at home there. Tell why you think as you do.

By courtesy of the Chicago and Northwestern Railway

Figure 3

In the trays which you see in Figure 6, there are grapes which men have spread out to dry in the sun. In what other part of the world have you found men doing this kind of work?

Just in these six views, there are shown mountains near the sea, high mountains far from the sea, desert land, a vineyard, and grazing lands. There are, besides, many other kinds of places in the United States to which you might take your visitors. In fact, it would be impossible, even in many years of travel, to show them all there is to see in your homeland, for it is a vast country of many kinds of places.

A check. — Did not Figure 2 remind you of Figure 142 in *Journeys in Distant Lands*, Figure 3 of Figure 152, Figure 4 of Figure 62, Figure 5 of Figure 131, and Figure 6 of the paragraph about raisins on pages 71–72?

From Distant Lands to Yours

Coming from Europe or Africa. — Suppose that these children of distant lands were all to accept your invitation to come to the United States. On the map in Figure 7 you can follow in a general way the routes by which they would come from their lands to yours. Follow them also on a globe, if there is one which you may use. On the map, find the land in which Kanda lives. Find the United States. In what continent is it? What ocean would Kanda cross to reach the United States? Notice carefully the east-west lines on the map. Suppose Kanda sailed due west across the Atlantic from the mouth of the Congo. Would he reach the United States, a land north of it, or a land south of it? What direction is the United States from the mouth of the Congo River?

Figure 4

By courtesy of the Santa Fé Railroad Company

Notice the width of Kanda's country from east to west, and think again of the hundreds of miles one must travel in order to cross it. Then notice the distance Kanda would have to travel in order to cross the Atlantic to the nearest shore of the United States.

On the map in Figure 7, find the Strait of Gibraltar. Five of the boys and girls probably would sail through this strait on their journey to the United States. Which five would they be? Suppose they sailed due west from the Strait of Gibraltar. Would they reach the United States, a land north of it, or a land south of it?

Find Jan's home on your map. In what direction from it is the United States? If Ivar sailed from southern Norway due west across the Atlantic to North America, would he reach the United States or a land north of it? Which voyage across the Atlantic would be the longest, the one due west from Norway, the one due west from the Strait of Gibraltar, or the one due west from the mouth of the Congo? Do you remember about the voyage Amundsen made from the northern part of the Atlantic to the southern part? How do you think the weather conditions on the trips due west across the Atlantic would differ from those on Amundsen's voyage? What difference do you think there would be between a voyage across the Atlantic from Norway to the United States and one from the Congo to your country?

A journey puzzle. — The following paragraphs describe a voyage across the Atlantic Ocean to the United States. Decide as you read them whether it is a voyage across the northern part of the Atlantic, or one across a part of the Atlantic much nearer the equator. Give two reasons for your answer. Find, too, five things which the captain or the passengers on the ship did because of the conditions which they met on the voyage.

Crossing the Atlantic. — "We looked back from time to time at the shore from which we had sailed. It grew dimmer and dimmer till it seemed but a faint, ragged line along the eastern horizon. At last it disappeared altogether, and besides our ship itself there was nothing in view but the clouded sky above, the great restless sea, and many gulls. The wind blew damp and cold. The vast reach of dark waves under the gray sky made everything we had left seem very far away, and we began to feel the loneliness of the sea. Of course, in the cozy rooms below deck, we could almost forget we were not on land, but it was the Atlantic itself which we were most eager to know, rather than the ship and the many people on board.

"Soon after breakfast the next morning, we went on deck again. The sky was still gray, and the wind even colder than on the day before. As we sat in our big deck chairs, we were chilled in spite of the

Figure 5

By courtesy of the Denver and Rio Grande Railway

Figure 6

By courtesy of the Santa Fé Railroad Company

Figure 7. The United States and the Atlantic World

warm coats we wore and the steamer rugs in which we were wrapped.

"On our third day out, the wind was so high and the sea so rough that every passenger had to remain below deck. Although we could not see the stormy ocean we could feel it, for our great ship was rocked to and fro by the enormous waves. Fortunately, the storm did not last long. On the fourth day part of the deck was enclosed in canvas in order to shelter us, and we could look out again upon the gray world of sky and water. As we watched, hour after hour, it seemed that we must be upon an endless sea, and

© Fairchild Aërial Camera Corporation

Figure 8

we began to long for a sight of land. We saw none, but we did get glimpses during the afternoon of several great icebergs that had drifted southward from far-northern shores. We wished for a closer view of them, but at the same time we were glad that they were not *very* near us, for we knew that our ship might sink if it struck one. We learned that our captain had sailed south of the regular course to avoid them.

"It seemed a very different kind of world upon which we looked on the fifth day, for the sun shone, and the sky was blue. The wind was less cold than it had been, and the sea had lost its dismal look. It made us wish that all the days of our voyage had been fair. A second sunshiny day followed. That day, as we sailed southwestward, we met several ships and knew we were nearing the end of the voyage.

"We expected to sight land early on the seventh day. When we woke and found that our ship was not moving, our first thought was that we had come into port at night. We soon found that, instead, we were in a fog so dense that the captain thought it was unsafe to go ahead. So, with land only a few hours away, the boat stood almost still for several hours, while its hoarse fog horn warned other ships of its whereabouts. It was not, indeed, until the morning of the eighth day that we were roused with the joyous news that we were entering the harbor of the great city of New York. Much excited, we hurried on deck to catch our first glimpse of America. At last we had reached the end of our ocean voyage, and were about to land in North America on the *western* shore of the wide Atlantic."

A check. — Compare your answers to see if all of you solved the puzzle in the same way. Then find sentences 4, 9, 10, 13, 15, 17, 22, and 26. The answers may be found in these sentences. Do you think, after reading these sentences again, that your answers were correct?

The most important Atlantic route. — As a matter of fact, people coming to the United States from the Congo or from the

Figure 9

© Fairchild Aerial Camera Corporation

Mediterranean, as well as from lands farther north, probably would cross the *northern* part of the Atlantic. Many of the people who come from Mediterranean lands or from the Congo first go north along the eastern coast of the Atlantic and then west. Jan, Kanda, and all the others, then, probably would cross the northern Atlantic and would land at the port of New York. Find the sign for this city in Figure 7. Pretend that all the children decided to come on the same boat, and that you went to New York to meet them.

The Great Landing Place

Watching a ship into port. — If you were in an airplane above the eastern part of the city of New York, you could look down on the land and water shown in Figure 8. In this picture you are looking nearly west across part of New York City. As one of you reads aloud the following paragraph, the others may find in the picture the things mentioned.

At the left is Upper Bay, through which the ship bringing the children from other lands would pass. It is marked " 1 " on the picture. From high in the air even a very large ship seems small, just as those in the picture do, but, unless clouds prevented, you could see the ship you are watching steam past the island on which the Statue of Liberty stands (" 2 "); on past Ellis Island (" 3 "), where immigrants who are coming into the United States are examined before they enter the country; and finally into the Hudson River (" 4 "). From the picture, tell what you think the people on board the ship would notice first about the city.

The docking place. — Now suppose your airplane moves to a place high above the mouth of the river and that you look northeast across the city, as in Figure 9. Notice

Paterson
Passaic
Weehawken
Hoboken
East Orange
Newark
Jersey City
ELLIS ISLAND
UPPER NEW YORK BAY
Elizabeth
Bayonne
NEWARK BAY
THE NARROWS
BRONX
QUEENS
BROOKLYN
RICHMOND
LOWER NEW YORK BAY
LONG ISLAND SOUND
A
B
C
D
1
2
3
4
NEW YORK CITY
and Vicinity
LEGEND
The more important Railroads
The more important Piers and Terminals
1 Piers at which ships from South America, the West Indies, southern North America, and Asia dock
2 Piers at which ships from South Africa, Australia, Asia, South America and the Mediterranean dock
3 Piers at which ships from the West Indies and southern North America dock
4 Piers at which ships from Europe and from other parts of North America dock
General Drafting Co Inc., N.Y.

Figure 10

that the Hudson River is in the left part of this picture. Since the bay is behind you to the south, you do not see it. From this place above the river mouth, you could watch the ship move north till at last it stopped at a pier (" 1 ") almost three miles upstream. Suppose that, after being examined, the children from other lands all were permitted to enter the United States, and that you were to guide them about New York City.

Learning to be a guide. — Cornelius and Pepino probably would feel more at home in New York than the other children would, because they both live in great seaport cities. In New York, however, there are several times as many people as there are in both Rotterdam and Naples. About one-thirteenth of all the people of the United States live in New York City or in places within ten miles of it. As you guided your visitors about New York, they probably would wonder how so many people can make their livings in such a small space. You would want to plan to show them things that would help them to answer this puzzling question. With the help of the following paragraphs, try to learn just what you would want them to see.

1. Find various kinds of work which the people there are doing to make their livings.
2. Find in what kinds of buildings they work.
3. Find in what kinds of homes they live, and where they play.
4. Find ways in which people travel in the city.
5. Find reasons for all the facts you learn.

Then plan what you would do as a guide.

The island heart of the city. — From the map in Figure 10 you can discover some facts about the city that the airplane pictures do not show. For example, you can tell that most of the part of the city shown in Figure 9 is on an island called Manhattan. On Manhattan is the heart of the city. The island is about two miles wide in the wider southern part. About how wide, then, is the northern part? About how long is the island on its western, or Hudson River, side?

Other parts of New York. — The picture in Figure 9 was taken from an airplane above the place marked " A " on the map. Turn your map so that you are looking directly along the line from " A " to " B." In Figure 9 you are looking in the same direction. As one of you reads the following paragraph aloud, the others may find in this picture the things mentioned.

The bridge nearest you in the picture is Brooklyn Bridge, which connects Manhattan Island with Brooklyn, a part of New York City. The next two bridges also connect Manhattan and Brooklyn. The one you see next, still farther north, joins Manhattan and the part of the city called Queens, and crosses the narrow little island that lies between them. The bridge farthest north spans the water between Bronx, another part of New York, and Queens. These five bridges are among the greatest ten bridges in the world.

Find East River and these five bridges on the map. Find the four parts of the city which the bridges touch, and one other part. On the map, the land within the city limits is colored darker than that outside. Are there any bridges across the Hudson River from Manhattan? From the map, find one reason why it is easier to bridge East River than it would be to bridge the Hudson River. Notice, too, that the map shows you that the northern part of Manhattan and the northern part of East River are longer than they seem to be in the picture. They appear shorter in the picture than they really are because they were farther from the camera, as it took the picture, than the southern part of the city was. The picture in Figure 8 was taken from a place in Brooklyn above " C " on the map, and in it you are looking along the line " C " — " D." The part of New York City called Richmond is too far south to show in this picture. What does the map show

Figure 11 © Ewing Galloway

you about the Upper Bay that the picture does not show? Which bridge in this picture is Brooklyn Bridge? Which two bridges across East River that are shown on the map do not show in this picture?

A famous freight street. — To get closer views of parts of the city near its shores you might go first along the street which you can see in Figure 9 just back of the piers along the Hudson. This is called West Street. Tell why this seems to be a good name for it. In Figure 9, find the place in West Street which is nearest "2." Suppose that from this place in the street you were looking north. The picture in Figure 11 was taken at this point in West Street, looking north. The buildings at the left extend on to piers. Each large pier shed, then, lies between two "slips" in which boats dock. Freight received or shipped by boat passes through these sheds. What does the number of trucks lead you to think about the amount of freight that is carried along this street? Thousands of men are kept busy each work day moving freight to and from the piers of New York harbor, and other thousands work at loading and unloading boats.

Planning a trip around Manhattan. — To learn about other places in the city near the water front, you might next take a boat ride around Manhattan Island. From the map (Fig. 10), find in what three rivers you would sail in making this trip. East River and Harlem River really are not rivers at all, but straits. What bodies of water does East River strait connect? The Harlem River? With the aid of the legend, find on the map the signs that stand for places along the shore where there are the more important piers.

Shore sights along the Hudson. — Parks border much of the northwestern shore of Manhattan. Passing south along this shore, you find that Riverside Park, although narrow, extends along the river for about three miles. What, then, helps to make this an attractive place for a park?

Just south of Riverside Park you find a railroad yard, cattle pens, and a grain elevator. The piers that extend into the river here are those you see opposite "3" in Figure 9. From this place to the southwest corner of the island you pass about one hundred great piers with slips alongside of each in which boats can anchor. These piers are all built out over the water on piles. Nearly all the steamship companies that use these piers are those whose boats go to and from other parts of North America or to and from Europe. Besides the larger boats belonging to these companies, you see many ferry boats and other small craft plying between some of these piers and other parts of the harbor to carry passengers and freight.

At both the southwest and southeast corners of the island there are small parks. Notice them in Figure 9. The one you see in the foreground of the picture is called Battery Park, because, more than a century ago, a battery was built there to help protect the city which already had grown on the southern end of the island. Do you see why this corner was a good place to choose for it?

The round building in the park is the old battery, which has been remodeled and now is used for an aquarium. This corner of the island has been kept for a park, then, partly because of its history, as well as because of its water front.

Along East River. — Between Battery Park and Brooklyn Bridge there is a pier used by a great fruit company. Perhaps you might see bananas from the southern part of North America being unloaded upon it. On the piers just beyond is a great fish market, and under Manhattan Bridge, near "4" in Figure 9, there are oyster houses.

Along the east side of the island, you find that the piers are fewer and smaller than those of the southwestern shore. Besides piers used for the landing of passengers and freight, you see some that are kept as places where people can come to play. Would you like to play on a pier? Why? Along this shore, too, are some of New York's large hospitals. What reason do you see for building them near the water? As you continue north in East River, you pass ship-repair yards, and perhaps see one of the boats which fight fires along the water front. You may meet barges carrying waste away from the city, and near some slaughter houses perhaps you may see live animals being unloaded.

Through the Harlem River. — About eight miles from Brooklyn Bridge you enter the Harlem. Although much freight is carried on this strait, you find no very large ships there, and along much of the water front ships do not dock. At many places near shore the land is high, and for several miles railroad tracks line the eastern bank. Along the western bank for some two miles the steep edge of the highland is used for parks. In lower places, however, you pass lumber yards and factories and a plant where small ships are built. Several bridges connect Manhattan with the mainland across the Harlem. Find them on the map in Figure 10.

Before you complete your trip around Manhattan you realize that there is much work and play going on along its many miles of water front. What reasons do you now see why men are using the shores of the island as they are?

Seeing ships from many lands. — You now have seen where there are piers at which ships from other parts of North America and from Europe dock. From the map and the legend in Figure 10, find places in the harbor to which you might go to see ships from each of the other continents. Can you find in Figure 8 the piers that are numbered "3" on the map? Near many of the piers of the harbor there are great warehouses in which products that the boats carry are stored while waiting to be sent away on other boats or on trains.

Manhattan and trains. — Since the heart of New York City is on an island, trains either cross bridges or pass through tunnels beneath the water to enter it. Many passenger and freight trains bringing people and freight to New York come from west of the Hudson. Some of them pass through tunnels under the river to reach the island, but most of them stop at the western shore, and the people and freight are taken by boat across the river.

On the map in Figure 10, find Weehawken. In Figure 12, you are looking down from an airplane upon part of the Weehawken water front and the buildings just back of it. In the lower right-hand corner, you see part of a pier from which passengers ferry to and from Manhattan. Find the chains of freight cars on and near the piers. If the cars in the picture are large enough for you to count them, you will find that there are hundreds. Many of them contain freight for Manhattan Island and will be run on to floats which then will be towed by tugs across the Hudson into slips alongside the Manhattan piers. After they are unloaded there, they may be loaded again with goods bound from New York westward. In Figure 8, there is a car

Figure 12 *By courtesy of the New York Central Lines*

float to the left of the bridge nearest you, and another may be seen at the end of one of the piers in Figure 12. About two thousand freight cars are daily towed to and from Manhattan in this way. Most of them are towed across at night or very early in the morning. Do you see why? Now you can tell more about what may have happened to some of the truck loads in Figure 11. The yards and piers where freight comes to the end of a railroad line or steamship route are called *terminals*.

South of Weehawken there are many other terminals along the western or New Jersey shore of the Hudson. On the map in Figure 10, find Jersey City and its long line of piers. Find the Jersey City shore in the picture in Figure 8. At the Jersey City terminals you could see even more freight cars than you saw in Figure 12. Cars are towed on floats not only between west-shore terminals and Manhattan, but also between these terminals and those in Brooklyn and other parts of the great harbor.

Lighters. — Some of the freight in the cars in Figure 12, especially if it is to be carried away from New York in ocean-going ships, will be taken from the cars at the Weehawken piers, and put in boats called lighters. You can see several lighters near the piers in Figure 12. The tall poles you see on them are parts of hoisting machines which are used in loading and unloading freight. Tugs tow lighters to the ships on which the goods are to be sent away. Some freight is stored in warehouses while waiting to be shipped. Notice that the two large grain elevators which are shown in Figure 12 can be reached

conveniently both by train and by boat.

Work at terminals. — In various ways, then, scores of thousands of people in New York City are kept busy handling passengers and freight. To do this, men must do many different kinds of work. There must be, for example, engineers to drive the engines that switch the freight cars about the railroad yards near the piers. There must be clerks who keep records of where each car is going and what it is carrying. There must be men, too, who manage the great steamship and railroad companies. Much of their work is done in offices that are not near the terminals. Several of these offices are in the tall buildings you have seen in the pictures of southern Manhattan.

Something to do. — See how long a list you can make of the kinds of work that men do in connection with the trains and steamships and piers of New York harbor. You might begin your list, for example, as follows:

1. Driving a switch engine.
2. Keeping records of cars.
3. Managing a railroad company.
4. Sorting freight.
5. Selling passenger tickets.

At the end of your list write these sentences: "Along many miles of the shores of New York harbor large ships can dock. This is *one* reason why so many passengers and so much freight come to New York City, and why many people there are doing the kinds of work here listed."

Keeping a notebook. — It will be very helpful to you to keep a geography notebook. At the top of the first page in it you might write "Some kinds of work men do in connection with piers." Under this title, or a similar one, you might copy neatly the list you have made and the two sentences you wrote at the end of the list. If you can find in a magazine or newspaper a good picture of New York piers or of the harbor which you can cut out, you might paste it on the following page of your notebook.

There will be many later suggestions for notebook work, and for ways in which you can use the material which you keep in it.

Manhattan streets. — You might next visit parts of the city where you can see people doing at least two other kinds of work.

First, however, notice in Figures 9 and 10 the directions of the streets in the northern part of Manhattan. Do you think it would be easy or hard to find your way about in this part of New York? Why? Find three places in the southern part of the island where streets run in much the same direction as that of the coast line nearest them. This should help you to see one reason why it is harder for most strangers to find their way about in southwestern Manhattan than it is farther "uptown."

Some shopping districts. — Notice in Figure 9 that there are two sections of the city in which there are clusters of many high buildings. One is near the southwest corner, and the other is nearly opposite "1," a little more than half way from the Hudson River to East River. To this second section you might come to shop, for many great department stores are in this part of the city. Here you can see one thing that is done with much freight that is left in New York. The millions of people who live here need so much food and clothing and so many home furnishings and other goods that thousands of them make their livings in stores where these things are sold. In these stores you find goods from many parts of the world.

Some of the streets near-by are thronged with shoppers in the daytime and with pleasure seekers at night, for near the shopping district there are many places of amusement. Electric signs such as those you see in Figure 13 make this busy corner a bright spot at night.

If you were buying goods not for yourself, but for a factory or retail store, you might do your shopping in the wholesale district farther south, near the group of very high office buildings. For different things you would go to different places. To buy hides and skins, for example, you could go to the

Figure 13

© Ewing Galloway

streets near the west end of Brooklyn Bridge.

Skyscrapers. — In Figure 14 you have a closer view of some of the very tall buildings on southern Manhattan. Find the tallest one in the picture. It is more than an eighth of a mile high, and has fifty-five stories. Thousands of people can work in the offices of such a mammoth building. When all the ground in this part of the island was in use, and there was need for more space for banks and for many kinds of business offices there, it was gained by making buildings of many stories. A thirty-story building has how many times as much room as a three-story building covering the same ground space?

Factories. — On your trip around Manhattan you learned that at places near East River there are slaughter houses. You could also find meat-packing plants where many people work. There are other kinds of factories, too, between East River and the shopping districts and at various places elsewhere in the city. In all, there are more than thirty thousand, two-thirds of which are in Manhattan. Many are small, but many others are very large. In Brooklyn, near the wharves where raw sugar is unloaded, there are sugar refineries. In other factories, coffee brought from foreign lands is roasted and ground. From hides and skins, boots, shoes, and many other leather articles are made. Millions of books and papers are printed in the city each year. What do you now know about New York that helps you understand how factories here can get materials from many parts of the world? What materials are used in the factories where the following things are made: bread, millinery and lace, cigars, jewelry, candies, clothing?

In this list there are only a few of the many things that are made in New York mills and factories. By far the most valuable of these products is clothing. Thousands and thousands of people are at work making garments of various kinds for men, women, and children. Many of these workers are people who have come from foreign lands. What have you already learned about New York that helps you to explain this? Many people in all parts of the United States wear clothing that these people have made.

You have seen now another way in which

Figure 14

By courtesy of the United States Army Air Service

the freight that comes to New York is used. What is it? Name, too, some things that you now think might be in the packages in Figure 11 that are being sent *away* from New York.

Homes. — As you read about these people, do you not wonder where they all live? Some of them live near their work, and others live many miles from it. Some of the factory workers in southeastern Manhattan live in apartment buildings that are called tenements. In the tenements many families are crowded together in a single building. Even in the northern part of Manhattan most of the people live in apartments, and not a few of the apartment buildings are so large that many families live in each. Where land is needed for so many uses, it is so valuable that only a few people can afford to live in houses. Since the apartment buildings and houses are very close together, there are few yards. That is one reason why parts of the city are kept as parks. There are parks in some of the hillier inland parts of Manhattan, as well as in places along its water front.

To and from work in Manhattan. — A great many people who work in Manhattan do not live on the island, but have their homes in places where they need not be so crowded. Each work day they must pass the waters that surround the island. They "ferry over," come in trains through the tunnels, or ride or walk across the bridges. There are three kinds of railways in Manhattan. Subway trains run in tunnels beneath the surface, street cars on the surface, and elevated trains on tracks built many feet above the ground. In spite of all these means of traveling, the cars, as well as the ferries, are very crowded at the hours when the people go to and from

Figure 15. The United States and the Pacific World

their work, for Manhattan is indeed a "busy" island.

Things to do. — To find how well you could now guide people about New York City, tell all you can about each of the topics in the paragraph "Learning to be a guide" (p. 9). Then tell, using Figures 8–14 as aids, just what you would plan to show your guests from other lands.

Make a list of other things you would like to learn about the city. Keep this in your notebook, so that you can refer to it from time to time. As you read

other stories about New York, hear people describe the city, or visit it yourself, you may learn the additional facts that you would like to know and so become a better guide. There are many things, too, that you cannot see in the city itself that help to explain why New York has come to be such a great city. As you see other parts of the United States, you will find more reasons. Keep a record of all you find, for they, too, will help you to be a better New York guide. Look again at the map in Figure 7. What does the dot on it which stands for the city of New York now suggest to you?

Preparing for Other Visits

Other plans. — Would you not now like to learn to guide people about your whole country, as you have about its largest city? Since your land is very large, this will take you a long time. Most of the pages in this book are used to tell you about the United States. After you have studied the rest of those pages carefully, you can plan just what other places in your own country you would take the children from other lands to see.

Scattered parts of your country. — From the maps in Figures 7 and 15, you can see that, besides the United States proper, there are some scattered American lands. Notice that on these maps all those lands have the same color that the United States has or are marked "U. S." Notice that Alaska and the land along the Panama Canal are parts of the continent of North America, but that the other American lands outside of the United States proper are islands or groups of islands. How many of these islands or island groups are in the Atlantic Ocean? How many are in the Pacific? Which is the largest of the parts of the country that are not in the United States proper? Which of these lands would you expect to be most nearly like Norway? Why?

To which of these American lands would you have to make the longest journey in order to go to it from the United States? The distance to the Hawaiian Islands from the nearest part of the western coast of the United States is somewhat more than 2000 miles, and the distance from the Hawaiians to the Philippines is somewhat more than 4700 miles. The distance from the United States to the Philippines is more than a fourth of the distance around the earth at the equator. It takes about three weeks to make the trip. You would have to travel thousands and thousands of miles, therefore, in order to see all parts of your country. What do these maps and your globe show you about the size of the ocean which touches the United States on the east and the size of the one which touches it on the west?

Helpful maps. — Just as the large map of the city of New York helped you to learn to be a New York "guide," so maps of the United States and of other parts of it will help you in learning to be a United States guide. You already have learned that map drawings of the same land may be of very different sizes. For example, the map of North America in Figure 16 is much larger than the map of North America in Figure 15. Yet they both stand for the same thing. We say that the map in Figure 16 is *drawn on a larger scale*. Notice in the corner of the map in Figure 16 the line marked "scale of miles." Notice in this drawing the distance that stands on this map for one hundred miles. If the map were drawn on a still larger scale, the distance which would stand on it for one hundred miles would be *longer* than it is in Figure 16. If the map were drawn on a *smaller* scale, the distance which would stand for one hundred miles would be *shorter* than it is in Figure 16.

Notice the map of North America in Figure 17. Do you think it is drawn on the same scale as the map in Figure 16, or on a different scale? To be sure that you are right, put the straight edge of a piece of paper along the "scale-of-miles" line in Figure 16 and put two little marks on the edge of the paper to show the distance which stands for two hundred miles. Then see if this distance is the same as that which stands for two hundred

RELIEF MAP
OF
NORTH AMERICA
Scale of Miles
0 100 200 300 400 500
GENERAL DRAFTING CO. INC. N.Y.

Figure 16

NORTH POLE
ASIA
ARCTIC OCEAN
Bering Sea
ALASKA
Yukon
Mackenzie R.
Arctic Circle
GREENLAND
ICELAND
Baffin Bay
Hudson Bay
CANADA
NEWFOUNDLAND
Gulf of St. Lawrence
St. Lawrence R.
Great Central Plain
ROCKY MOUNTAINS
Coast Ranges
Cascade Mts.
Sierra Nevada
Columbia R.
Saskatchewan R.
Superior
L. Michigan
Huron
L. Erie
L. Ontario
Missouri R.
UNITED STATES
Great Basin
Colorado R.
Ohio R.
APPALACHIAN MOUNTAINS
Atlantic Lowland
Arkansas R.
Red R.
Mississippi R.
Rio Grande
Gulf Plain
Gulf of California
GULF OF MEXICO
MEXICO
Tropic of Cancer
CUBA
HAITI
PORTO RICO
JAMAICA
CARIBBEAN SEA
PANAMA CANAL
SOUTH AMERICA
PACIFIC OCEAN
ATLANTIC OCEAN
NORTH AMERICA
Scale of Miles
0 200 400 600 800
ELEVATION IN FEET
More than 10,000
5,000 to 10,000
2,000 to 5,000
1,000 to 2,000
Sea Level to 1,000
Below Sea Level
GENERAL DRAFTING CO. INC., N.Y.
60°
50°
40°
30°
20°
10°
130°
120°
110°
100°
90°
80°
70°

Figure 17

Figure 18

By courtesy of the United States Forest Service

miles on the line marked "scale of miles" in Figure 17. Notice, however, that even though these maps are on a larger scale than the one in Figure 15, they are really on a very small scale, for a very short distance on them stands for two hundred miles.

In using a map of any region, it is important for you to notice the scale if it is given. It will help you to see about how large different parts of the region are, and how far apart the places shown on the map are.

New map signs. — The picture in Figure 5 was taken in the mountains in Western North America. These mountains are very high. As you can see in the picture, trees grow only on their lower slopes. Their tops are so high that on them it is too cold for trees to grow. As you see, the upper slopes are either bare or covered with snow and ice.

The picture in Figure 18 was taken in the mountains of Eastern North America. The trees suggest that these mountains are not so high as those in Figure 5, for, except where they have been cut down, trees are growing along the very tops of the ridges.

In Figure 19, you are looking down from an airplane upon one of the higher parts of the eastern mountains. From so high a viewpoint, the trees barely show, but you can see how such a mountainous land appears from far above it. In the map in Figure 16, the signs for mountains are much like those in the earlier maps. Find the signs for the mountains of Western North America. For the mountains of Eastern North America. Do they not look much like the mountains themselves as they appear from the airplane?

As you look carefully at the mountains in Figures 5, 18, and 19, you can tell that some are higher than others, but you cannot tell at all closely the height above the sea of any of them. The same thing is true of the map in Figure 16. You can tell from it that the western mountains are higher than those in the East, but you cannot tell how much higher, nor just how high they are.

On the map in Figure 17, there are signs which show you more than the pictures and

Figure 19 *By courtesy of the United States Army Air Service*

the map in Figure 16 do. Besides the names of the more important mountain groups or *systems* and various other names, colors are used on this map in such a way as to show you about how high above the level of the sea different parts of North America are. The legend shows you what each of these colors stands for. What color stands for the highest lands? Can you find this color in any part of Eastern North America? This shows you, then, that all of the eastern mountains are less than 10,000 feet high. Land 10,000 feet high is almost *two miles* above sea level. Can you imagine a road two miles long stood up on end? This will help you to think about how high above the sea some of our lands are. Are any of the highest lands in North America in the Rocky Mountains (Fig. 17)? Are any of them in the Sierra Nevadas? In Figure 17, what color stands for the highest land in the Appalachian Mountains? About how high are the higher Appalachians? This map shows you, then, that some of the mountains in the West are more than twice as high as most of those in the East.

By comparing Figures 16 and 17, find the signs for the Rocky Mountains in Figure 16. Find the signs for the Sierra Nevadas. For the Appalachian Mountains.

Boundaries. — How can you tell where your yard ends and your neighbor's yard begins? In some cases, fences or hedges separate yards. In others, a sidewalk or a few stones laid in a row mark the dividing line, or *boundary*. In still others, there is nothing to show where the boundary is, and so you cannot tell just where you pass from one yard to the next.

Boundaries between countries are much like boundaries between yards. In some places they are plainly marked in various ways. In others, you can go from one country to another without knowing when you cross the boundary. Find Mexico on the map in Figure 17. The street you see in Figure 20 is in a little town on the border between the United States and Mexico. If you were on the side of the street at the right of the picture, you would be in the United States. If you were on the side shown at the left, you would be in Mexico. A white line has been drawn *on the picture* to show you where the boundary is. Notice the horses hitched to a wagon part way down the street. In what country are the horses? In what country is the wagon?

Find Canada on the map in Figure 17. Some parts of the boundary line between Canada and Alaska pass through forests. In many such places the trees that stood in a narrow strip of land along the boundary have been cut down, and when you cross this cleared strip you can tell that you are going from one country to the other. At the place where the railroad crosses this boundary, there are two flag poles a few feet apart. From one of them flies the flag of Canada, from the other the American flag. Perhaps you have seen other ways in which boundaries are marked. In some places, rivers form boundaries between countries. In other places, mountain ranges do.

Figure 20

By courtesy of the Santa Fé Railroad Company

In Figure 16, there is nothing to show you what part of the continent belongs to the United States, what part of it belongs to Canada, and what part to Mexico. In Figure 17, boundary lines between these countries are shown. Remember that these lines do not stand for real lines on the ground. They simply show you where such lines would pass if they were drawn.

East-west lines. — Find the two special east-west lines on the map in Figure 17. Notice that part of North America is north of the Arctic Circle. Do you remember that this tells you something about the length of the longest day in that part of the continent? Does the sun ever stay above the horizon there for twenty-four hours at a time, or not? Does the sun ever stay above the horizon for twenty-four hours at a time in any part of your country? If so, where? In any part of the United States proper? How can you tell (*Journeys in Distant Lands*, p. 140)?

How much of the United States proper is north of the Tropic of Cancer? Then in what direction must people in the United States look if they wish to see the sun at noon on any day? Is there any part of North America in which people must sometimes look in the southern sky and sometimes in the northern sky to see the sun at noon? If so, where? How can you tell (*Journeys in Distant Lands*, pp. 138–140)?

Notice, too, that on the right and left margins of the map, the other east-west lines are numbered ten, twenty, thirty, and so on. These numbers show you how far from the equator these lines are. All the places on the east-west line marked ten are *ten degrees* from the equator. Each of these degrees is a little less than seventy miles. This means, then, that all the places on the line marked ten are about seven hundred miles from the equator. Is North America north or south of the equator? Are these places, then, seven hundred miles north of the equator, or seven hundred miles south of it?

Find the Mississippi River. Find its mouth. About how many degrees from the equator is the mouth of the Mississippi?

Figure 21 *By courtesy of the Tampa Board of Trade*

Figure 22 *By courtesy of the Geological Survey of Canada*

It is, then, about 30 × 70, or 2100, miles from the equator. Find the St. Lawrence River. About how many miles from the equator is its mouth?

The place shown in Figure 21 looks about the same, winter and summer. The picture in Figure 22 was taken in the winter. In summer, the scene there would be very different. Both of these pictures were taken in North America, one something less than thirty degrees from the equator, the other almost sixty-five degrees from it. Which one was taken about thirty degrees from the equator? Sixty-five degrees from it? Which was taken in Canada? Which in the United States? The North Pole is ninety degrees from the equator. Then one of these places is about one-third of the distance from the equator to the North Pole, and the other is more than two-thirds of the way. If you were to read now that a place in North America is seventy degrees north of the equator, would it not at once suggest to you a land of long, cold winters, and of short summers? As you work with other maps, and notice how far from the equator various places are, these numbers on east-west lines will suggest more and more facts to you.

The north-south lines on the map in Figure 17 are numbered, too, but you will not need to use such lines and the numbers on them till later.

You see, then, that the map in Figure 17 tells you several more kinds of facts than the earlier maps did.

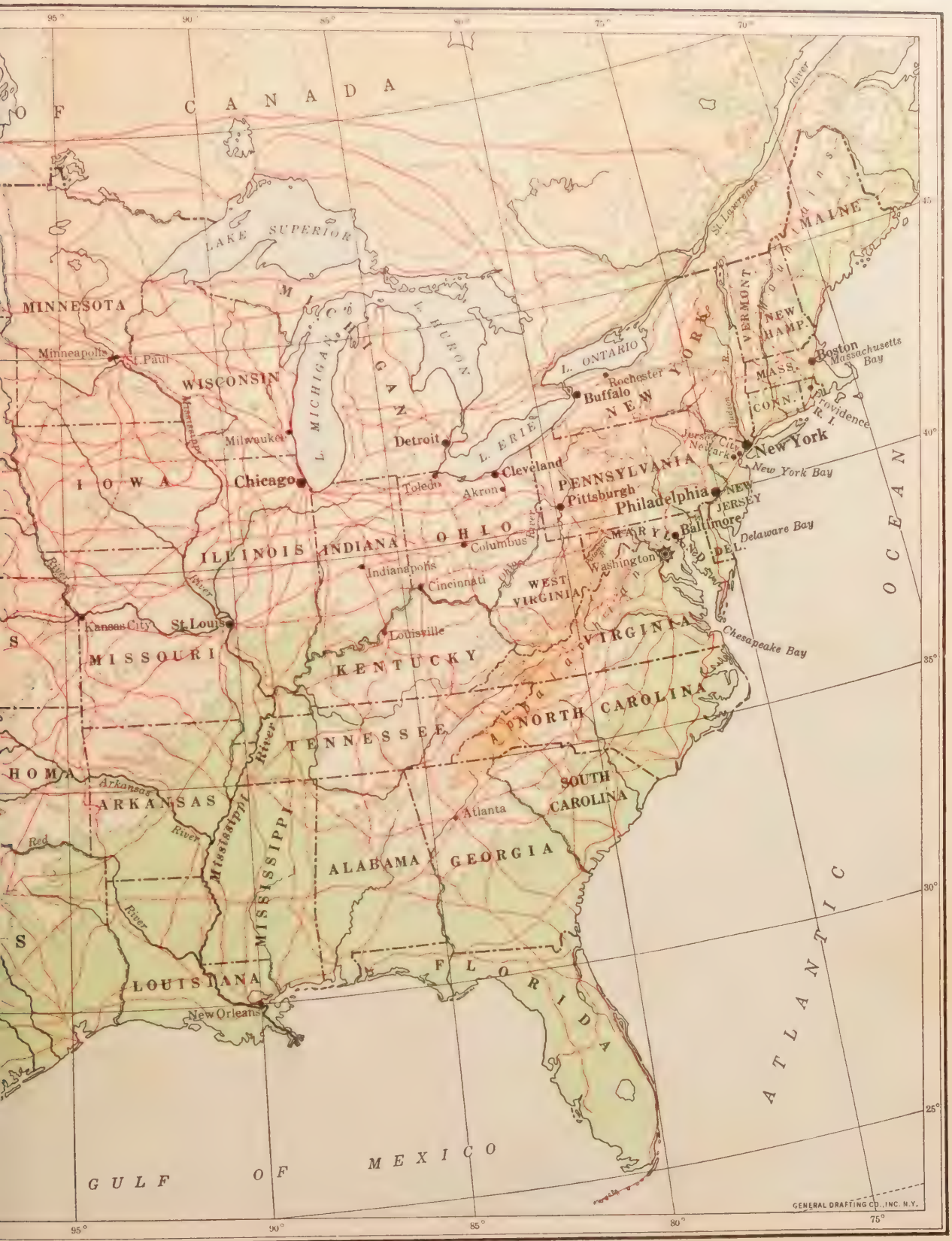
The Uses of Lands near Your Home

Reading from maps about your home. — Which of the new kinds of signs that you have found on the map in Figure 17 can you find on the map of the United States in Figure 23? Is this map drawn on a larger scale than the map in Figure 17, or a smaller one? If you draw an oblong $18\frac{1}{2}$ inches wide and 25 inches long on the blackboard or on a large piece of paper, and draw *in it* as large a map of North America as you can, you will have a map drawn on about the same scale as the map in Figure 23.

Can you find on the map in Figure 23 the

UNITED STATES
Miles
0 50 100 150 200
SYMBOLS FOR CITIES & TOWNS
More than 1,000,000 (1920)
500,000 to 1,000,000
200,000 to 500,000
Principal Railroads
ELEVATION IN FEET
More than 10,000
5,000 to 10,000
2,000 to 5,000
1,000 to 2,000
500 to 1,000
Sea Level to 500
Below Sea Level
DOMINION
WASHINGTON
OREGON
IDAHO
MONTANA
NORTH DAKOTA
SOUTH DAKOTA
WYOMING
NEBRASKA
NEVADA
UTAH
COLORADO
KANSAS
CALIFORNIA
ARIZONA
NEW MEXICO
TEXAS
MEXICO
PACIFIC OCEAN
Gulf of California
Seattle
Portland
San Francisco
Oakland
San Francisco Bay
Los Angeles
Denver
Great Salt Lake
Columbia River
Snake River
Missouri River
Arkansas River
Colorado River
Rio Grande
Cascade Range
Coast Ranges
Sierra Nevada Mountains
125°
120°
115°
110°
105°
100°
45°
40°
35°
30°
25°

Figure 23


CANADA
LAKE SUPERIOR
MINNESOTA
Minneapolis
St. Paul
WISCONSIN
Milwaukee
Chicago
IOWA
L. MICHIGAN
L. HURON
Detroit
L. ERIE
L. ONTARIO
Rochester
Buffalo
NEW YORK
Toledo
Cleveland
Akron
PENNSYLVANIA
Pittsburgh
Philadelphia
NEW JERSEY
Baltimore
MARYLAND
DEL.
Delaware Bay
Washington
Columbus
Indianapolis
Cincinnati
ILLINOIS
INDIANA
OHIO
WEST VIRGINIA
VIRGINIA
Chesapeake Bay
Kansas City
St. Louis
Louisville
MISSOURI
KENTUCKY
NORTH CAROLINA
TENNESSEE
SOUTH CAROLINA
ARKANSAS
Atlanta
ALABAMA
GEORGIA
LOUISIANA
New Orleans
FLORIDA
VERMONT
NEW HAMP.
MASS.
CONN.
R.I.
Boston
Massachusetts Bay
Providence
New York
New York Bay
MAINE
St. Lawrence River
OCEAN
ATLANTIC
GULF OF MEXICO
GENERAL DRAFTING CO., INC. N.Y.
95°
90°
85°
80°
75°
70°
45°
40°
35°
30°
25°

boundary between the United States and Canada? Between Mexico and the United States? The United States is divided into smaller parts called *states*. Find state boundaries on the map in Figure 23. Have you ever crossed state boundaries? If so, can you find on the map the ones you crossed?

Find in Figure 23 the sign for your own state. By reading on this map *all* the signs, old and new, which you now have learned, you can tell many things about your state. See which of you can make the longest list of facts about your state which you can read from this map.

Taking pictures near your home. — Suppose you were taking, within ten miles of your home, five outdoor pictures that would show to people in other places *the kind of region in which you live and the ways in which men are using much of the land near your home.* A girl who lives in a town in the central part of Illinois made the following list of pictures that she would choose to take near *her* home *for this purpose.*

1. A picture of a small coal-mining village taken from a little hill far enough away so that the rows of miners' houses, the tall building near the mouth of the mine, and a coal train just leaving could all be seen.

2. A view from a valley bluff looking across a tree-bordered stream to the opposite bluff, with fields of corn, wheat, clover, and oats in the valley on both sides of the river.

3. A picture of a farm not in the valley, with the farmhouse, barns, and silo in view, as well as almost level fields of corn, and a pasture in which there are hogs, cattle, and horses.

4. A bird's-eye view of a farm village, showing the plan of the town, the kinds of houses, and the grain elevator near the railroad station.

5. A winter scene showing snow on the ground, some boys and girls skating on a pond, and beyond the pond a little brick and tile factory.

Do you not think the pictures she chose to take would give you a very good idea of the kind of region in which she lives and the ways in which men are using the land there? From them you could tell at least five kinds of work (coal-mining, grain-farming, stock-farming, the shipping of grain, and the making of brick and tile) and one kind of winter play that you might see there. What can you learn about her home from the winter scene?

Near her home there is a house which many strangers visit, because it was the home of a very famous man. The bank building in the town is interesting to some visitors, because it stands on the site of the first house in the village. Notice, however, that she was a good enough geographer not to include these things in her list, for they would not show the chief ways in which men are using the lands there nor the kind of country in which she lives.

Make a list of the things you would like to show in five pictures taken near *your* home. If you live in the country, you may get some suggestions from the list of pictures which the Illinois girl chose. If you live in a city, the pictures in Figures 9, 11, and 12 may help you choose wisely. To what places would you go to take the five pictures that would show these things? Would you take any of the pictures from an airplane if you could? Why? Would you take all of them from an airplane? Why? Can you imagine how the house in which you live would look in an airplane picture? Can you think how the street or road nearest your home would look? Would you take the pictures at different seasons of the year, or all of them at the same season? Why? Would any of your pictures look like any of those in Figures 1–6? If so, like which of them?

If you can get a large-scale map of your city, town, or county, try to find on it the place where your home is. Try to find signs on it for streets or roads which you know.

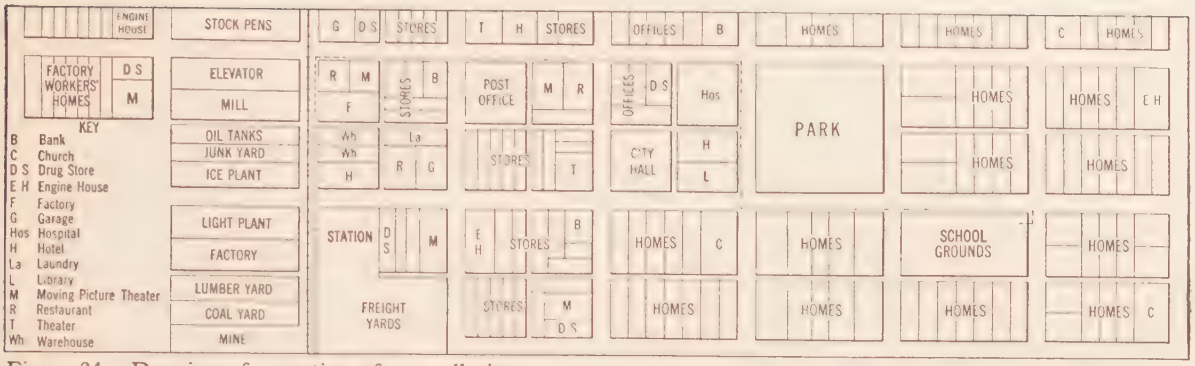


Figure 24. Drawing of a section of a small city

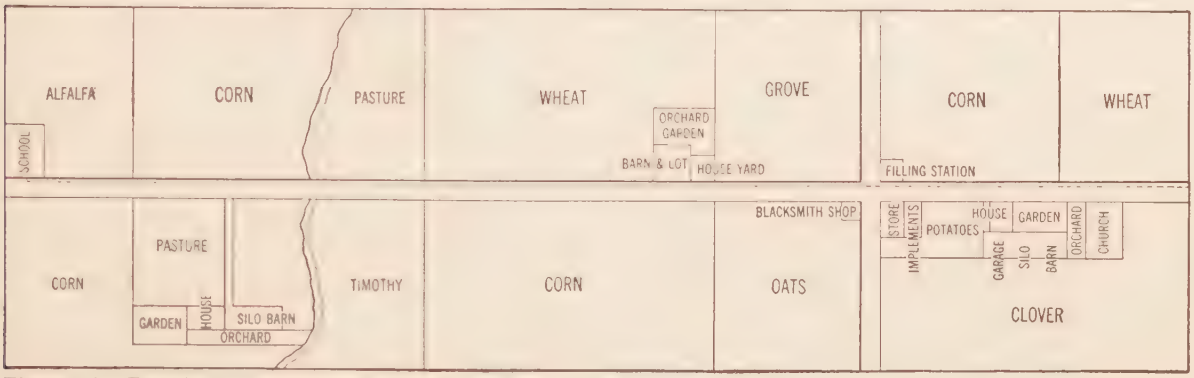


Figure 25. Drawing of a country section

Try to find on it the five places at which you decided to take pictures near your home. What would the pictures show about the lands near your home that your map does not show? What does the map show that your pictures would not?

Taking a walk near your school. — Suppose that, starting with a visitor along a street or road near your school, you were to walk from the schoolhouse to a place a mile away. In what direction or directions would you walk in order to show your guest as much as you can about the uses men are making of the land near the school? Make a list of the things you could point out to him as you walked along that would help him to see how the land is being used. Perhaps you will need to take the trip yourself in order to make this list.

Try to make a drawing or map which will show the things you would like to point out along your walk.

In Figures 24 and 25 there are drawings of this sort. The first shows a section of a small city, and the other a section in the country. What kinds of work are suggested by the city drawing? By the country drawing? If you think a little about these drawings, you can see *some* of the reasons why people have chosen certain places for certain kinds of work. Notice, for example, the kinds of work that are done near the railroad in the city section. Why is it convenient to have the hotel near the railroad station? What reason do you see for putting the grain elevator, lumber yard, coal yard, and factory close to the railroad? Would you prefer to have a park, a church, and a schoolhouse near the railroad, or at some distance from it? Why? If you wanted to set up a garage and blacksmith shop, a gasoline filling station, or a store in a country district, would you choose a corner where two roads meet, as has been done in the section shown in Figure 25, or some other place? Why? Do you not think that land near such a

corner is in a good place for a picnic ground? For a church? Why?

Perhaps these drawings will help you to see *some* of the reasons why men are using the land near *your* school as they are. As you learn more about other parts of the United States, you will be able to understand more about your home region too.

Show just where the drawing you make would fit into the map of your city, town, or county. Keep your drawing in your notebook. On the map in Figure 23, find as nearly as you can where the map of your city, town, or county would fit into the map of the United States. What does this make you see about the size of the United States? Why does not this map of the United States show many of the things you can see on your mile walk?

Suggestions for extra work. — Perhaps you can really take or get in some way the outdoor pictures near your home which you decided you would like to have in order to show others the kind of region in which you live. You might show on a map or drawing where each picture was taken, and write other facts about the things shown by each that you think would be helpful to another person studying it.

Perhaps your teacher or parents can put you in touch with some school children in another part of the United States. If so, you might write a letter asking some child there to exchange views and descriptions of places near his home with you. Perhaps in this way you could get for your school some good pictures of other parts of the United States. *You should be careful, of course, to send only outdoor pictures which show how men use the land near your home, and you should request any child with whom you exchange pictures to send you also only views that show such things and that suggest ways in which people near his home make their livings.*

To Other Parts of the United States

Distances and directions. — The map in Figure 23 shows you about how far and in what direction other parts of the United States are from your home.

Which one of the cities shown on this map is nearest your home? If it is not New York City, find in the following way how far it is from New York by an airline route. (1) Place on the map a strip of paper having a straight edge, with that edge touching both cities. Put a mark on your paper at each city, to show the distance on the map between them. (2) To measure this distance, lay the marked edge of your strip along the line showing the scale of miles in Figure 23, taking care that the left mark is under "0" in the scale. (3) If the distance between your marks is longer than the scale line, put a mark on your paper just below "200," at the end of the scale line, next move your paper to the left until the new mark is under "0," and continue in this way till your right-hand mark touches the scale line. Then count up the total distance carefully.

From the map in Figure 23, decide in what direction you would go from home to reach the Atlantic Ocean. Point in that direction. Point toward the Pacific. Toward Canada. As you study about other places, think of how to reach them from your home.

Guide questions. — With the help of the pages which follow, you can go in imagination from part to part of the United States and Canada. In connection with each part to which you "go," keep in mind the following "guide questions."

1. How are men using the lands or waters here? Are they using the land, for example, for homes, for parks, for factories, for other business buildings, for mine buildings, for roads, for lumber camps, for a city, for growing crops, or for something else?

2. Why are they using lands in these ways instead of in other ways?

3. What other things are men doing here because of the kind of region in which they live?

From now on whenever you *actually* visit other parts of your country, or ride through them in a car or on a train, keep these questions in mind. They will help you to see many interesting things which otherwise you would miss.

Choosing the part of the United States to study next. — In learning to be a guide about the United States, it is helpful to study first the part of the country in which fewest people live. From the following exercise you will find which part has fewest people.

Use an outline map of the United States on which the state boundaries are shown and on which there are no names. If such printed outline maps cannot be had conveniently, trace the map in Figure 324. You have learned now that maps may show different kinds of things. You can make your outline map show about how many people live in each state. What is the largest number of people you have ever seen together? How many such groups would 200,000 people make? Does this help you to imagine a vast crowd of 200,000 people? Suppose you let one dot on your map stand for 200,000 people. Find the state of Washington on the map in Figure 23, in the northwestern part of the United States. Find this state on your outline map. Put six dots in the state on the outline map. This means that there are at least six times 200,000 people in that state. As a matter of fact, there are almost as many people there as seven dots would stand for, but not quite. Notice, then, that the dots do not show *exactly* how many people there are, but only *about* how many there are. Neither will this map show *just where* in the state these people live. It will merely show about *how many there are in the state altogether*. Find Oregon on the map in Figure 23. Find it on your outline map. Put three dots in Oregon. What does this mean? How does the number of people in Oregon compare with the number of people in Washington? Put in each of the other states a number of dots equal to the figure that you find after the name of the state in the following list. There are two states in which you will not put any dots. This of course does not mean that there are no people in them, but that there are less than 200,000 people in each.

California 17
Idaho 2
Nevada 0
Utah 2
Arizona 1
Montana 2
Wyoming 0
Colorado 4
New Mexico 1
North Dakota 3
South Dakota 3
Nebraska 6
Kansas 8
Oklahoma 10
Texas 23
Minnesota 11
Iowa 12
Missouri 17
Arkansas 8
Louisiana 8
Wisconsin 13
Michigan 18
Illinois 32
Indiana 14
Ohio 28
Kentucky 12
Tennessee 11
Mississippi 8
Alabama 11
Maine 3
New Hampshire 2
Vermont 1
Massachusetts 19
Rhode Island 3
Connecticut 6
New York 51
New Jersey 15
Pennsylvania 43
West Virginia 7
Maryland 7
Delaware 1
Virginia 11
North Carolina 12
South Carolina 8
Georgia 14
Florida 4

On the map in Figure 23, find the Mississippi River. This river forms all or part of the western boundary of five states. Find them. On your outline map draw a heavy line along the western boundary of these states. Which is larger, the part of the United States *east* of this line, or the part *west* of it? From the dots on your map find whether more people live in the smaller part or in the larger part.

Notice on the map in Figure 23 that much of the western part of the land between the Mississippi River and the Pacific Ocean is high or mountainous. The eastern edge of the Rocky Mountains, in Montana, Wyoming, Colorado, and New Mexico, is the eastern edge of this highland section. From the population map which you have made, do you think that more people live in this highland section or in the part of the United States which is between the Rocky Mountains and the Mississippi River? You will study first, then, the western part of the United States.

Be sure to keep your population map in your geography notebook.

Figure 26

By courtesy of the Santa Fé Railroad Company

WESTERN UNITED STATES

From the eastern edge of the Rocky Mountains to the Pacific. — In Figure 26, you are looking westward toward the Rocky Mountains from a road in central Colorado. Of course you can see from any one spot only a very small part of these mountains, for, like the Alps, they are a broad belt of many ranges.

On the map of the western states in Figure 27, find the line which marks the eastern edge of the Rocky Mountain highland. On a fresh outline map of the United States, sketch this line. Color lightly the part of the United States which is west of it. In this book, this part is called Western United States, or simply the West. Keep your map in your notebook for later use.

The West is so very large that many books would be needed to describe all the places you might see there. However, the following pages about Western United States will help you to see how men work and play in different parts of the West, and some of the reasons why they live as they do. Thinking about these facts and the reasons for them will help you to understand, too, why people live *where* they do in this part of your country.

Famous Forests

Where forests supply work. — Suppose you were to go into a region such as that shown in Figure 28. What kind of work do you think men might profitably do in such a place? Name other parts of the world in which you have found great forests. From the pictures, how do you think the forest in Figure 28 is like those in Figures 96, 184, and 186 (*Journeys in Distant Lands*)? How is it different?

Figure 28 is a scene in the western part of the state of Washington. In what part of the United

WESTERN UNITED STATES
SYMBOLS FOR CITIES & TOWNS
More than 500,000 Population (1920)
100,000 to 500,000
50,000 to 100,000
25,000 to 50,000
Other Towns
State Capitals
Eastern edge of the Rocky Mountains
ELEVATION IN FEET
More than 10,000
5,000 to 10,000
2,000 to 5,000
1,000 to 2,000
500 to 1,000
Sea Level to 500
Below Sea Level
Principal Railroads
Miles
0 50 100 150 200
GENERAL DRAFTING CO INC., N.Y.
DOMINION OF CANADA
WASHINGTON
OREGON
IDAHO
MONTANA
NORTH DAKOTA
SOUTH DAKOTA
WYOMING
NEBRASKA
NEVADA
UTAH
COLORADO
ARIZONA
NEW MEXICO
TEXAS
MEXICO
GREAT BASIN
PACIFIC OCEAN
Vancouver
Seattle
Tacoma
Spokane
Portland
Butte
Salt Lake City
Great Salt Lake
Denver
Carson City
Sacramento
San Francisco
Oakland
Berkeley
Golden Gate
San Francisco Bay
Fresno
Los Angeles
Long Beach
San Diego
Phoenix
Santa Fe
Columbia River
Snake River
Colorado River
Rio Grande
Missouri River
Yellowstone River
Arkansas River
Sacramento Valley
San Joaquin R.
Death Valley
Cascade Mts.
Sierra Nevada Mts.
Coast Ranges
Rocky Mts.

Figure 27

Figure 28 *By courtesy of the United States Forest Service*

States, then, is this forest? Would you expect lands there to be warmer or cooler than in the Congo region? Why? From what you have learned about trees and rainfall elsewhere, do you think there is much or little rainfall in this forest in Washington? In Western United States, forests cover some lands that are high, and some that are low, but there are at least two kinds of places where they do *not* grow. One kind you see in Figure 5. Why are there no trees on the higher slopes? Another kind is in Figure 4. Why are there no trees here? From the map in Figure 29, find out in what parts of the western states forests *do* grow. In these places, then, it is neither too dry nor too cold for trees.

From Figures 30 and 31, find all you can about the kinds of work done in some of the forests of Western United States, or near them. In Figure 30, notice the height of the men and the thickness of the logs. What does this show you about the size of some of the trees?

On the map in Figure 27, find Seattle, Washington. The lumber under the hoisting machine in Figure 32 is on a terminal in Seattle. What two kinds of things do you see in the picture which may be used to carry the lumber to distant places?

Directions for reading. — From the following paragraphs, try to check your answers to the questions you have just studied. Try especially to learn as much as you can, from these paragraphs, about (1) how men carry on logging and lumbering in parts of Western United States; and (2) why they carry on these kinds of work where they do, and in the ways they do.

Forests of narrow-leafed evergreens. — Millions of acres in the western part of the United States are covered with forests. In Washington and Oregon, there are many great firs and cedars like those in Figure 28. Can you imagine standing among them? Some of them would tower above you to a height of more than two hundred fifty feet. The trunks of many are so huge that the distance through them is from three to seven feet. Some are even larger. The undergrowth is as dense in places as in a tropical forest. There are many ways, however, in which you could tell that you were not among trees of the hot lands near the equator. As you walk through a forest in Western United States, you find many trees of one kind growing near one another. Firs, spruces, pines, and cedars, instead of having broad, thin leaves, have leaves so narrow that some of them are called needles. Since the leaves are narrow and are green all the year round, these trees are called narrow-leafed evergreens. They are called conifers, too, because the seeds of most of them are in cones.

In most of the Rocky Mountain forests, the chief trees are pines and spruces. You can see some of them in Figure 5. In the forests near the coast of northern California grow giant redwoods, the tallest trees in the world. Beneath the redwoods, there is less undergrowth than in the forests farther north.

It is not so hard to work in the forests of Western United States as it is in most tropical forests. Both in summer and in winter it is much cooler in them than it is in lowlands near the equator. In some of the Rocky Mountain forests, the winters are very cold, but in most of the forests in Washington, Oregon, and California they are mild. Lumbermen can work there at all seasons.

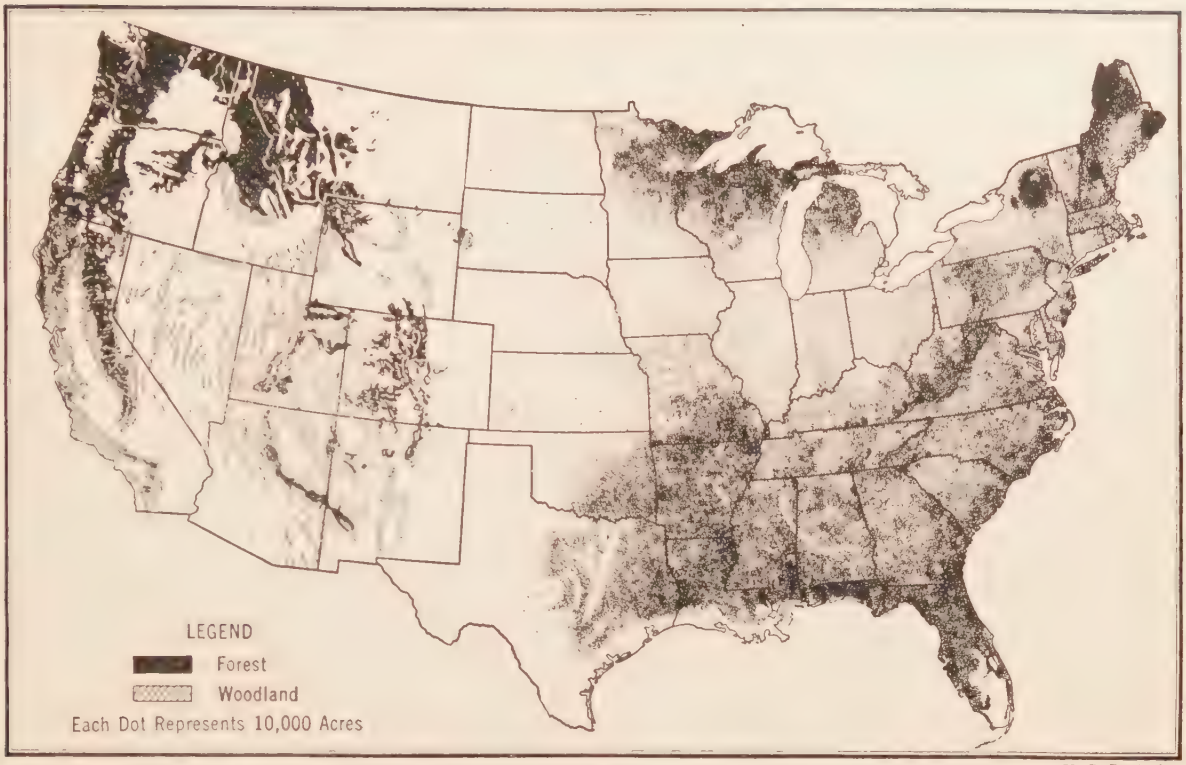


Figure 29. Forest and woodland

U. S. Dept. Agr.

By courtesy of Chas. C. Colby

Figure 30

Figure 31

By courtesy of the Seattle Association of Commerce

Wood cut from the trees of coniferous forests is known as soft wood. It is not so hard as most of that from tropical forests, and is used for a greater number of purposes. From the narrow-leafed evergreen forests of the West men get more timber each year than from the forests of any other section of the United States, and by far the largest part of it comes from the forests of the coast states.

From tree to lumber. — To fell the great trees, men saw through the huge trunks. After the trees crash to the ground, the branches are lopped off. In Figure 30, the trunk has then been cut into shorter lengths. The log at the left of the picture is ready to be dragged along the track ahead of it. The log at the right is waiting to be rolled along the platform of logs to take the place of the log at the left. By means of cables, the engine in the picture does the pulling. Another engine drags the logs along the track to places where they can be loaded on cars for shipment to sawmills such as the one in Figure 31, or to places from which they can be floated down a stream to sawmills. Do you think it would be worth while to build these tracks and to bring in the engines if there were only a few trees here of the kinds the lumbermen wanted? Do you see, then, that it is helpful to the lumbermen for many trees of one kind to be close together? The work of felling trees, cutting them into logs, and taking the logs to the sawmills is called "logging."

In the sawmills the logs are cut into lumber. Enough lumber for building a small house has been made from the trunk of a single large tree.

To some of the sawmills, logs can be floated. If it is very dry for much of the year, the streams may then be too shallow to float logs. In the forests of western Washington, western Oregon, and northern California, however, much rain falls. In most of them more rain or snow falls in the winter than in the summer, but some days in each month are rainy. Although there is much rain, it seldom rains very hard. Instead, there are many drizzly rains. Part of the rain which falls soaks into the ground, and part of it runs off the surface into streams. Many steady, gentle rains help to make the rivers of those districts usable at all times. However, some logs are too heavy to float, many are too large to float in the smaller streams, and most of the logging is not done near usable streams. Railroads now carry most of the logs to the sawmills.

Logging and rainfall. — You might find a pan or can whose sides are straight up and

Figure 32

By courtesy of the Seattle Association of Commerce

down instead of sloping, and before a shower you might set it on a level place where the rain can fall into it. Suppose that, after the shower, you find the water in the pan is a fourth of an inch deep. That shows a fourth of an inch of rain fell. If in a week there were three showers of a fourth of an inch each, you could say that three-fourths of an inch of rain fell that week. If in a year thirty inches of water fell in the form of rain or snow, you could say that the "annual precipitation" was thirty inches. In Figure 33, find the areas colored solid black in the part of the map which stands for western Washington. What does "average" mean? What, then, does the legend show you solid black means on this map? What do the other shades that appear in western Washington mean? By comparing the forest and rainfall maps (Figs. 29 and 33), try to find how much rain falls in other forested parts of Western United States. Is logging, then, done in parts of the West which have much or little rain? Why?

Check exercise. — From the reading, what answers to some of the questions about forest work did you find? What did you learn about why men carry on logging and lumbering in the ways they do in parts of the West?

For your notebook. — From the map in Figure 29, make a list of all the states in the West in which forests are found.

Copy in your notebook the following sentences: "Many men work at logging in the great forests of the West. Others are busy making, buying, selling, and shipping lumber. Forests are found only in the rainier parts of the western states."

Fishing in Western Waters

Where waters supply work. — What kind of work do Figures 34 and 35 suggest to you? Perhaps you can learn something else about these pictures from the List of Illustrations. On the map in Figure 27, find the Columbia River. Part of it forms the boundary between what two states? On the outline map on which you colored Western United States, put an *S* in Washington and Oregon near the mouth of the Columbia to show that salmon are caught in the streams there. Find Puget Sound. Put another *S* in Washington just west of the southernmost part of the Sound. Put a third *S* in Oregon near the Pacific Coast about half way between the northern and southern boundaries of the state. In the streams of the parts of Washington and Oregon which you have marked *S*, men find most

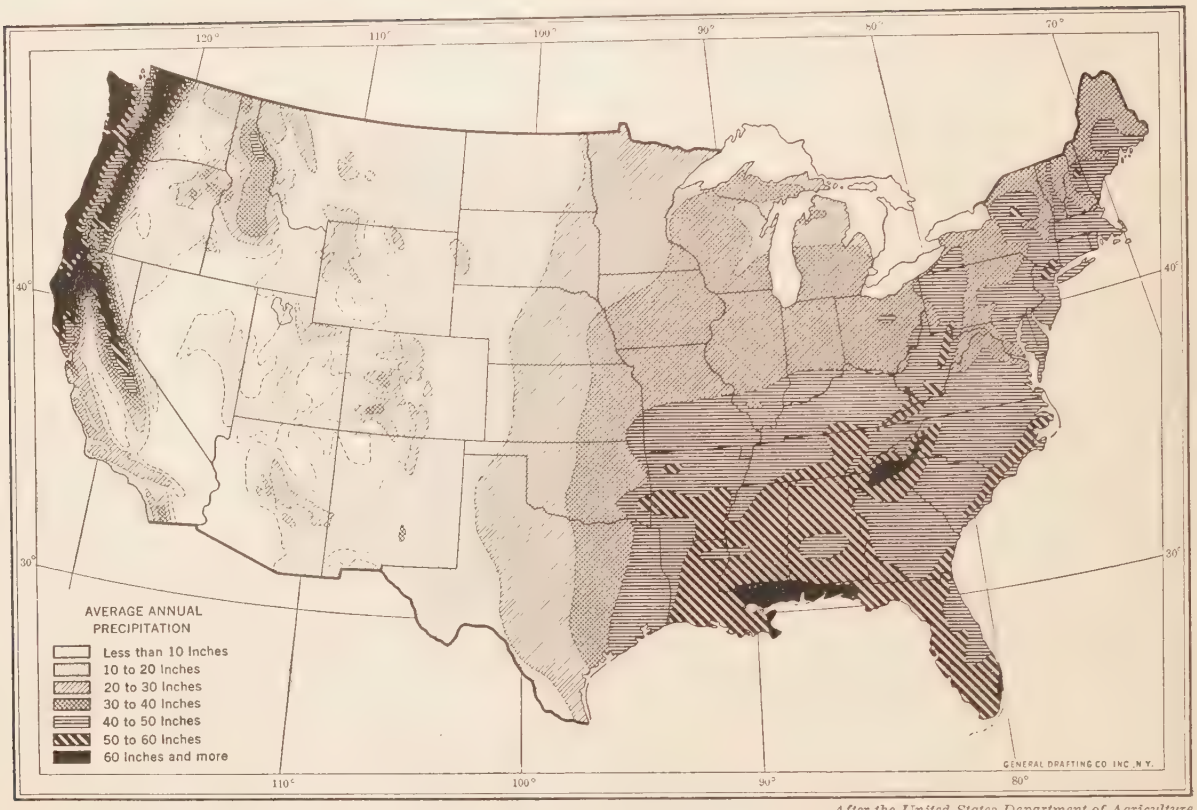


Figure 33. The distribution of precipitation

After the United States Department of Agriculture

of the salmon that are caught in the western states.

Directions for reading. — As you read the following paragraphs, check the ideas which the map and pictures suggested to you. Try also to learn from these paragraphs as much as you can about (1) how men fish in parts of the West; and (2) why they carry on this kind of work where they do and in the ways they do.

Catching and canning salmon. — In the lakes, streams, and coastal waters of the West, there are many kinds of fish, but of them all the salmon is most important. Salmon are large fish, many of them from three to four feet in length, and they live chiefly in the cool waters of the more northern seas and near-by streams. Although some salmon are found in the waters of northern California, far more are caught in the streams of Washington and Oregon. *In order to plan well the work of catching these interesting fish, men must know some of their habits.* Salmon live most of the time in the ocean, but each year thousands of them come from the ocean into streams. In the beds of these streams, they lay their eggs, in some cases at long distances from the sea, and the baby salmon travel downstream to reach the ocean in which they live while they are growing big. Salt-water salmon, then, can be caught in great numbers in the streams into which they make these journeys, and the best time to catch them is when they start on their trip upstream, for then nearly all of them are well-fed and fat. Most of them make this trip up the rivers some time between March and September, and so during that season many people are busy catching and canning them. Some salmon, especially along the Columbia River, are caught by means of fish "traps." In Figure 34 you can see men emptying salmon from one kind of trap.

Many people near the salmon streams buy fresh salmon to eat. Even to some distant places fresh salmon are sent in refrigerator cars, but more than half of all that are caught

Figure 34 *By courtesy of John N. Cobb*

Figure 35 *By courtesy of the Canadian Pacific Railroad*

are canned. As you would expect, the canning factories are near the waters in which the fish are caught. Many of the people who work in the salmon canneries in the summer are not needed there in the winter, and so find other work to do at that season.

Other fisheries. — To catch fish in the shore waters, and farther away in the ocean, men go out in fishing vessels or in smaller boats such as those in Figure 35. Little fishing boats much like these can be seen at many places along the coasts of Washington, Oregon, and both northern and southern California. Many kinds of fish are caught along these shores. Nearly all of those which are canned in the coastal towns of California are called either tuna fish or sardines. Most of the fish-canning factories of California need several times as many workers in the summer and autumn as they do in the winter.

In the summer time the fishing fleet that works near the entrance to Puget Sound captures much halibut. As autumn advances, the sea near-by becomes so rough that the smaller vessels tie up for the winter, while the larger ones go to fishing grounds farther north which are protected by islands from the rough waters of the open sea. Some vessels from California, too, go to these far-northern fishing grounds. Few people are engaged in catching and canning fish as compared with the number of people engaged in forest and lumber work, but almost half the fish canned in the United States, not counting Alaska, comes from the canneries of the three Pacific states.

Check exercise. — At what time of the year is most of the fishing done? Most of the canning of fish? Tell why. In what kinds of places in the West do men fish for a living? Why? What other things did you learn about why men carry on fishing as they do in parts of the West?

For your notebook. — Find San Francisco Bay on the map in Figure 27. On your outline map put an *F* in the ocean near the coast of California just north of the entrance to this bay, and another one just south of it, to show that many salt-water fish are caught in these places. Put *F*'s also in the Pacific (1) near the coast of southern California; (2) at the entrance to Puget Sound; (3) between Puget Sound and the mouth of the Columbia River; and (4) about half way between the mouth of the Columbia and the southern boundary of Oregon.

Copy in your notebook the following statements: "Some people in parts of the West make their livings by catching fish, or by canning them. Fishing must be done in places where fish can be found. Salmon are found only in cool waters. Fishing is done chiefly at the time of the year when the fish are most abundant in the streams and off-shore waters."

Some Scattered Settlements

Where minerals supply work. — As you look at the village in Figure 36, do you not wonder why men have chosen to live there? How would you describe their surroundings? Near the left edge of the picture find two small groups of buildings

By courtesy of the Santa Fé Railroad Company

Figure 36

far up the mountain side. Do they suggest to you the kind of work which most of the men of this town may be doing? You might find villages much like this one in many other lonely spots hundreds of miles apart. In each of the western states there are some such towns.

As you probably have guessed, most of the work which the people in these towns do is not *above* ground but *below* it, as in Figure 37, for in these places men find below ground rock in which there is gold, silver, copper, or other valuable minerals. Such rock is called *ore*. Do you see why men cannot dig these minerals wherever they may want to do so? Do you see, then, why men live in the kind of place you see in Figure 36?

Find Phoenix, in Arizona (Fig. 27). The picture in Figure 38 was taken sixty miles east of Phoenix. In these buildings, copper is being separated from the ore which is mined near-by. Find Butte, in Montana. Find Salt Lake City, Utah. At Butte, at a town near Salt Lake City, and at other places, you also might see views much like that in Figure 38.

Are Butte, Salt Lake City, and the place in Figure 38 near together, or hundreds of miles apart? In which of these three places would you expect the winters to be warmest? To be coldest? Why? Do you think there can be mines in some places where there is little rainfall? In some places where there is much rainfall? In some places where it is hot? In some where it is cold? How, then, *may* places where mining is done differ from places where logging is done? Why are mining towns "scattered settlements"?

Directions for reading. — From the following paragraphs, try to check your answers to the questions you have just studied. Try also to find as much as you can, from these paragraphs, about (1) how men mine, (2) the meaning of smelting, (3) how another miner besides man works, (4) how men dredge for gold, (5) how men get petroleum from the earth, and (6) why men mine where they do and in the ways they do in the West.

Mines and mining. — If men wish to open up a new mine, they first choose a place where, in their opinion, valuable minerals may be found. A hole is then dug or drilled down to the rock which they hope contains the mineral they seek. It sometimes happens that men are mistaken in their opinion, and that they do not find the ore they had hoped to discover. That is one of the chances which men who do mining take. If they find the ore as they expected, they make the hole large enough for the ore to be taken out through it. It is then spoken of as a "shaft." From the sides of the shaft they tunnel into the streak, or "vein," of ore. In Figure 37, at the right, is the entrance to such a tunnel. Tunnels may be dug in several directions from the central shaft. In some cases the miners can loosen ore with picks, but in many cases they must use explosives to loosen it. They then load the loose ore on cars, such as

Figure 37 *By courtesy of the Chicago and Northwestern Railroad*

the one at the right of Figure 37, which carry it to the shaft. In the buildings which you find above ground at a mine, there is in most cases machinery that runs the elevators on which the miners go up and down and on which the ore is lifted out of the mine. If a shaft passes through several layers or veins of ore, there may be tunnels leading off from the shaft at several different levels. The men in Figure 37 are in the lowest level of a gold mine. A small hole has been made to see if the "pay ore" extends still deeper, and one of the men is turning the windlass by which rock is raised from the hole.

In some places ores have been found so near the surface that shafts and tunnels were not needed. Near Salt Lake City, for example, there is a whole mountain of low-grade copper ore. In order to get this ore, men are simply stripping the rock from the mountain side. In time, then, as this ore is mined, the mountain will be destroyed.

Men, of course, can mine ores which they need only at places where such ores can be found. Many of these places in Western

Figure 38 *© Ewing Galloway*

United States are in mountains, but many others are not. Some are in deserts, others are not. Some are in warm regions, others in cold ones. Miners work, then, in many different kinds of places.

Smelting. — Not all mining settlements are small. In some places there is so much profitable ore that many people can make their livings there. Then, too, in some places the metal is separated from the ore at a mill near the mine. If heat is used to help get the metal from the ore, this work is called "smelting" the ore. Smelting is not done where fuel is too expensive, unless there are waterfalls near-by which can be used to generate electricity for heat. In mining towns where it *is* profitable to do smelting too, there is work for many people besides the miners. Figure 39 is a view of Leadville, Colorado, one of the important mining and smelting settlements. Find this place on the map in Figure 27. The town itself is in a valley about 10,000 feet above the level of the sea, and, as you can see from the picture, the near-by mountain peaks are much higher. Ores containing lead, zinc, and several other metals are mined in this district. Find in the distance the smokestacks of smelters. Why do you think the homes of the people are not nearer the smelters?

By courtesy of the Santa Fé Railroad Company

Figure 39

Another miner besides man. — In some parts of the West, something besides man has cut through veins of gold ore and partly separated the gold from the rock. It is water. Do you remember what you learned from pages 31 and 32, *Journeys in Distant Lands*, about the materials which the water in streams picks up and carries downstream? In the Sierra Nevadas, for example, there are gold ores, and much rain falls on the mountain slopes. As part of the rainwater runs off into streams, it carries bits of soil and rock into the streams, and so, gradually, the valleys become wider because of the materials which the water takes from the sides of the valleys to the streams. In the mountains many of the stream beds slope steeply, and so the water in them flows swiftly. It not only carries along with it the bits of rock washed in from the slopes, but it also picks up and carries downstream, or rolls along, materials from its own bed, and so it wears its valley deeper and deeper. If there is ore not too far beneath the stream bed, the river may in time cut its valley through the ore. Then some of the rock that is carried downstream has gold in it. Sometimes as the pieces of ore are rubbed against each other or against other rocks on their downstream journey, tiny grains of gold are loosened. Just as some other streams about which you have read drop part of their material here and there along their beds, so these streams deposit part of their load at places along their channels. In the sand and gravel of the beds of some of the western rivers, then, there is gold which the water of the streams has "mined."

Dredging for gold. — In Figure 40, you see a big dredge that man has built in order to get gold from these river gravels. The large buckets in which gravel is scooped out of the river bed do not show in the picture. Inside the dredge the gold is separated from the gravel, which then is carried on a chain belt to the end of the long arm at the right

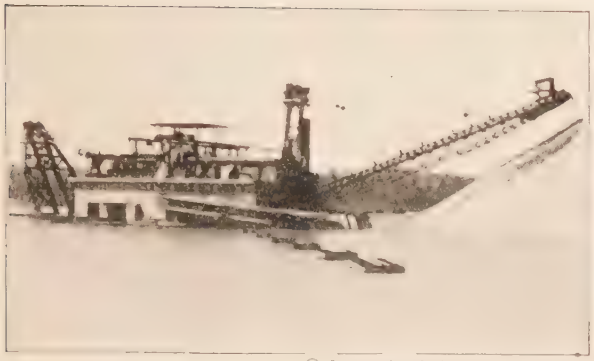


Figure 40 © International Newsreel Corporation

in Figure 40 and is dumped into the river.

Two other useful minerals. — Gold and silver sometimes are called "precious metals." Copper is not called precious, but we could hardly get along without it. It is the best material to use for carrying electricity, and so men use enormous amounts of it for telephones, telegraph instruments, telephone and telegraph wires, street cars, street-car cables, automobiles, power plants, cables through which electricity is sent from power plants, radios, and many other things which help men in their work or play.

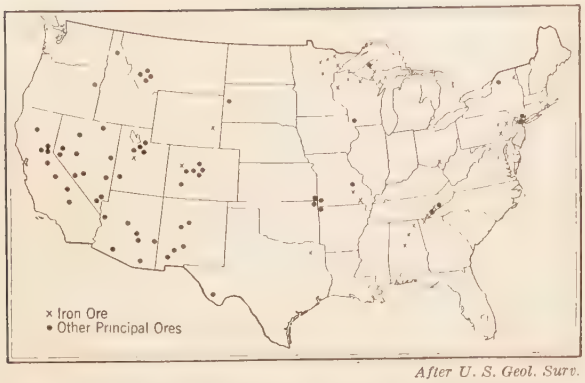
Salt is another useful mineral that has been collected by running water and is found in parts of the West. Find Great Salt Lake, in Utah (Fig. 27). Though streams flow into this lake, no water flows out of it. Much water evaporates from the lake, however, for many days there are bright and hot. There is some dissolved salt in the waters of all streams, and the streams flowing into Great Salt Lake carry salt into it. Salt does not evaporate, and the salt brought by these streams has been collecting in the lake for centuries and centuries. So the water has become very salty. Salt may be obtained from the lake by putting some of the lake water in shallow pans and letting all the water in the pans evaporate, leaving only the salt. In some very dry places in the West, there are deposits of salt, and of other minerals somewhat like it, on ground once covered by lakes. The waters of these lakes were all evaporated or drained off, and the minerals are found on the old lake beds.

Figure 41 By courtesy of H. C. Tibbitts

Petroleum. — In Figure 41 you see places in southern California where men are mining not ores, but petroleum. Petroleum "mines" are called oil wells. To "mine" petroleum, men drill holes down to the rock in which they expect to find the oil, but they do not have to go into the ground after it as they do to get ores. In some wells the oil is pumped up, and in others it comes to the surface without being pumped.

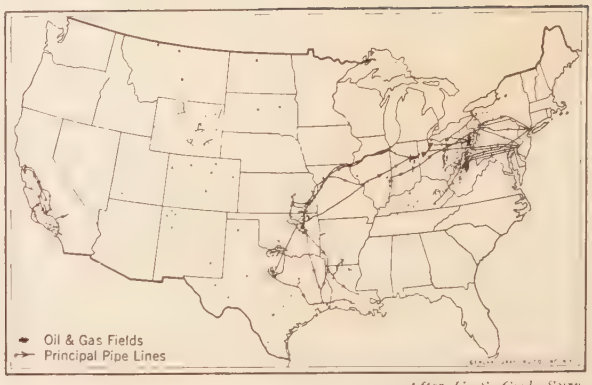
Petroleum has many uses. Which of them did you read about in *Journeys in Distant Lands*, page 10? From it there are made oils and greases to be used in machinery of all kinds. Without being oiled and greased, machines could be run only a very short time. Both gasoline and kerosene also are made from petroleum. Thousands of homes are lighted by lamps which burn kerosene. Engines run by gasoline are used for many purposes. For example, gasoline is used in most automobiles. It is no wonder that men are as eager to find rock which contains petroleum as they are to find ores which contain metals. "Oil towns," then, are among the scattered settlements of the West.

Check exercise. — 1. By following the directions for reading, what did you learn from the paragraphs about mining and smelting?



After U. S. Geol. Surv.

Figure 42. Districts producing metal ores



After U. S. Geol. Surv.

Figure 43. Oil and gas fields

Figure 44

By courtesy of the Denver Tourist Bureau

2. Find from Figure 42 where iron, a useful mineral not mentioned in the paragraphs you have read, is mined in the West. From Figure 43, find where petroleum is produced in the West.

3. How might you be reminded of one or more of the western states the next time you do one of the following things: (1) pass a gasoline filling station; (2) eat canned salmon; (3) use a silver spoon; (4) see men building a house of wood; (5) wear gold jewelry; (6) talk over a telephone? Tell which state or states each of these experiences might remind you of, and why.

Figure 45 *By courtesy of the Union Pacific System*

For your notebook. — From the description of a mine in the text, try to draw a diagram of a mine.

Copy in your notebook the following sentences: "Many people in the West make their livings by mining. Their work must be done where petroleum or useful minerals are found. These are found in many different kinds of places far from one another, and so mining villages and cities are 'scattered settlements.'"

Suggestions for extra work. — Show in a sand pan how water can be a "miner."

Try to show in a sand pan a lake with no outlet. Then use this model to help you explain how salt might collect in such a lake.

Wonderlands of the West

Work and play in the wonderlands. — Make a list of things in the West about which you have read or heard and which you would like to see. Many people travel in the West each year. They may go to see its mines, fisheries, and forests, but most of them go chiefly to enjoy the beautiful scenery in this land and to visit some of its unusual places. Notice carefully the larger buildings in Figure 44. How do you think some of the people of this town make their livings? Name some of the ways in which you think people can play when they spend their vacations in the mountains.

What have you learned already about the Columbia River? On the map in Figure 27, find Portland, Oregon. The people in Figure 45 are standing on the southern side of the Columbia River east of Portland. Are the distant mountains and the land across the river in Washington, or in Oregon? What have men built here that makes it easier for people to travel along this river to enjoy such views? Find on the map in Figure 27 the Colorado River. Find the part of it that is in northern Arizona. The picture in Figure 46 was taken in this part of Arizona at a point overlooking the river. Do you see why the Colorado River also attracts many tourists?

Directions for reading. — Not only along rivers and among mountains are there interesting places in the West to see, but also in the deserts, along the coast, and elsewhere. From the reading, find things that the pictures do not show that help to explain why many tourists go to the West. Find, too, all you can about other ways in which people work and play in the wonderlands of the West. Find reasons why they work and play in these ways.

Mountain pictures. — If you ever have been among mountains like those in Figures 5, 26, 44, and 47, many things are suggested to you by these pictures that cannot be shown in them. Even if they were beautifully tinted, the colors would not be so lovely as those of the mountains themselves. Then, too, from pictures, it is hard to realize how huge these mountains are. After you have climbed one of them, however, it seems very high. Try to imagine such a climb as the following one. The crisp, bracing mountain air becomes cooler and cooler as you go higher. Now you are in the midst of the tall evergreens of the lower slopes. Here there are deep shadows beneath the trees, patches of sunlight, spicy woods odors, and perhaps the sound of wind blowing through branches. Then for some distance your trail follows a little mountain stream. You are between the steep, rocky side of its valley and the swift current. Here and there great shining bowlders lie in the stream bed, and the water foams around them. Leaving the valley, you come out upon a narrow, winding ledge cut in the side of the mountain. You can almost touch the topmost branches of the pines on the lower slope. Over them you look off across a wide, grassy valley and a lovely

By courtesy of the United States National Park Service

Figure 46

tree-bordered lake to other mountains. On their lower slopes you see a dark strip of evergreens like that through which you are passing, and above them bare mountain sides and white peaks. As the trail winds on up the mountain, you come, even though it is midsummer, to a snowbank, lying in a shady place beneath the trees. At its very edge, dainty, gaily colored flowers bloom. Still higher, the trees are few, small, and strangely twisted, as are those in Figure 48. "Warriors of the timberline," these bent old trees sometimes are called, because of their struggles with wind and cold. Here, near the upper edge of the tree belt, is a lodge in which you rest for the night, at the end of this first day's climb. As you look back down the trail you have followed, you find that clouds are gathering, not above you, but *beneath* you. Soon they are so dense that you seem to be shut off from the lower world by a vast ocean of clouds. The air is chilling, and you are glad to feel the heat from the crackling logs which burn in the great fireplace.

At the beginning of the first day's climb you were about a mile above the sea, although you were at the foot of the mountain. You are more than two miles high at the beginning of the next morning's climb, and the peak is only half a mile higher. However, the air is so thin at this height, and the route is so steep, that climbing is more tiring than before. What had seemed from a distance like a smooth, bare slope is rough and rocky. A bowlder, loosened from some higher place, rolls past you. For a time you are near the edge of a great glacier. At each new resting place you look out upon wider and

Figure 47

By courtesy of the United States National Park Service

Figure 48

By courtesy of the Chicago and Northwestern Railroad

wider views. The peaks of another range beyond the nearest one can now be seen, and later the peaks of a third. Finally, at the summit, you see range after range and valley after valley, and you know that, on beyond them, farther away than you can see, are yet other ranges and other valleys. Then you begin really to feel the vastness of the mountains.

The Grand Canyon of the Colorado. — The valley of the Colorado River in northern Arizona is as deep as many mountains are high. If you look down, as in Figure 46, from the edge of the valley, you can get mere glimpses, here and there, of the winding river about a mile below you. From this height, it seems like a very small stream. As in the picture, you can see, between the edges of the valley and the river, great pyramids of rock that shut much of the river from view. In the bare faces of these pyramids, there are thick layers of highly colored rock. Many are a bright, reddish-brown. Others are yellow, or cream. Some are almost black. Can you imagine these lovely colors in the brilliant sunshine of the desert? Try to think, too, of the deep purple of the shadows. Along the faces of the pyramids and valley walls are great ledges, one above another, somewhat like giant stairsteps. On many of these ledges, as you can see in Figure 46, there are great piles of loose rock. The pieces of rock in these piles have crumbled from the faces of the cliffs above. About eight miles away, across the maze of many-colored pyramids, is the opposite edge of the valley.

At first it seems to you impossible to reach the river from the top of the precipice where

By courtesy of R. D. Salisbury

Figure 49

you stand, but at some places trails have been cut along the sides of the cliffs, and you can follow one of them down to the river. They are like mountain trails. Almost half a day's journey on horseback brings you to the widest ledge, or platform, which you see in Figure 46. Can you find in the picture the steep cliff between this platform and the edge of the river? As you follow the trail down this cliff and approach the Colorado, you find that it is not the tiny stream it seemed from above, but a swiftly-flowing, mighty river. Nevertheless, you marvel at the great depth of the valley which it has carved.

Of course, no matter how large a river is, it can cut a *deep* valley, or *canyon*, only in *high* land. On the map in Figure 27, find, with the help of the legend, the height of the land which borders the Grand Canyon in northern Arizona. Since water cannot flow uphill, the bed of the upper part of every stream is higher than the level of the lake, sea, or river into which the stream flows. So the bed of the Colorado River, even though it seems so low, is higher than the sea into which the river flows. If the land in northern Arizona, then, were not more than a mile above the level of this sea, the valley of the Colorado could not be a mile deep there.

Sea and sunshine; winter and summer travel. — Some people who go to the West enjoy, or perhaps need, sunshine and sea breezes more than they do mountain air and exercise. You already have learned that some parts of the West have very little rainfall. To these parts, people who want much sunshine can go. Along the coast there are lovely places where those who want to be at the seaside may stay. Many people, especially in the winter, choose to visit places along the southern coast of California, where there are palm trees and much sunshine as well as good beaches and beautiful ocean views.

Figure 49 shows a famous mountain valley wrapped in winter snows. Though quite as lovely in winter as in summer, it is then hard to reach, and travel in it is difficult. Accordingly its "camps," like those in various other parts of the western mountains, are kept open only during the summer season. Its hotel remains open in winter for those who come to enjoy winter sports.

Some people go to the mountains, sea, or desert, not only to travel, but to rest and to improve their health. For this reason, some of the places in the West which attract many tourists are famous not only for their beauty, but also as health resorts.

Figure 50

By courtesy of the Denver and Rio Grande Western Railroad

Other interesting corners. — A whole book might be written about other beautiful or strange places in the West. Some parts of the West have been set aside for Indians, and on these reservations you may see many different tribes. Some of the Indians in Arizona and New Mexico build houses of mud, or " adobe," such as those in the village shown in Figure 50. The Indian in the foreground of this picture is standing near the entrance to an underground council chamber. Of what other lands does this village remind you? (*Journeys in Distant Lands*, pp. 23, 39.) Do mud houses suggest much or little rainfall? Why? You can see, too, in Arizona, the homes of ancient cliff dwellers, carved in the face of rocky cliffs somewhat like those of the canyon of the Colorado. In the Northwest, there are some huge, cone-shaped peaks that once were volcanoes, but that are no longer active. The natural bridges in Utah, the petrified forests in Arizona, the geysers of Wyoming, and many beautiful waterfalls all are famous, but perhaps none of them are more interesting than the giant trees of California, larger even than the great firs, and among the oldest living things in the world. Beautiful limestone caves have been found in New Mexico. Do you wonder now that so many tourists go to the West each year that many people can make their livings by taking care of them?

Some of the wonderlands of the West have been set aside as national parks or as national monuments. Figures 46, 47, and 49 all show scenes in national parks. These lands are kept as places in which people can come to camp, fish, ride, tramp, shoot certain game at some seasons, see the beautiful scenery, rest, and enjoy themselves in other ways.

More pictures. — One interesting business in California is that of taking moving pictures. Two things that you already have learned about this state are very helpful to the people who do this work. Do you think you know what they are? Some of the moving-picture plays are stories of happenings in the mountains, on the seashore, in deserts, in forests, in mining towns, or in large cities.

By courtesy of the Union Pacific System

Figure 51

How many of these things can you find in California? Can you take better outdoor pictures on clear days, or on rainy days? In much of California there are a great many sunny days. Do you see, then, two reasons why many moving pictures are taken in California?

Check exercise. — 1. By following the directions for reading, what did you learn about why men work and play as they do in western wonderlands?

2. What did you find about the height of the land in northern Arizona? What does Figure 27 show you about the height of the other lands between the Rocky Mountains and the Sierra Nevada-Cascade ranges? Some broad, high lands are called *plateaus*, and the states in this part of the West sometimes are called *Plateau States*. Find the Snake River, a branch of the Columbia. Notice the deep valley along the lower part of the Snake. How does the height of the land across which the river flows help you to explain the depth of its valley?

3. Between the Columbia and its branches and the Colorado and its branches find the part of the plateau from which no rivers flow to the sea. Into what *do* the rivers of this area flow? This part of the plateau is called the Great Basin. Great Salt Lake is the largest body of water in the Great Basin. It is fun to go bathing in this lake because the water is so dense that you cannot sink in it. What have you learned already about this lake (p. 41) that explains why its water is so dense? In Figure 51, you are looking across a part of the lake. Find on the map in Figure 27 the sign for the railroad which crosses the lake. Can you not now give at least two reasons why Great Salt Lake is visited each year by many tourists?

For your notebook. — Sketch the Rocky Mountains, the Sierra Nevadas, the Cascade Mountains, and the Coast Ranges on your outline map of the United States on which you colored the West. In order to do this, compare the maps in Figures 27 and 16. Try to make your mountains look like those in Figure 16. Think as you do it of the pictures which those signs suggest to you. What kinds of work and play are suggested to you by these mountains?

Copy in your notebook the following sentences: "In the West there are many wonderlands which attract tourists. Tourists visit some of these places in winter as well as in summer; others can be visited conveniently only in summer. Some of the wonderlands are health resorts, partly because of their temperature, scant rainfall, and pure air. Many people in the West make their livings by helping care for tourists."

Suggestions for extra work. — Leaving part of the sand pan bare for the sea, show in the pan a lowland bordering the sea. In another sand pan show a highland near the sea. Then dig a valley in each. Which valley can you make deeper? Show why.

You might start a class scrapbook, a scrapbook of your own, or a collection of pictures that would show some of the wonderlands of the West.

Western Farms and Ranches

Where men farm in the West. — On the map in Figure 27, find Salem, Oregon, south of Portland. What does the color on the map show you about the part of Oregon in which Salem and Portland are located? Near what branch of the Columbia River are both these places? The picture in Figure 52 was taken just south of Salem. What signs are there in it of farming?

Follow the route of the railroad from Portland to Seattle and thence north along the eastern coast of the Sound to the northern boundary of Washington. Notice the color of the map along this route. From it, would you expect this part of Washington to be much like the Willamette Valley, or very different? Some crops are best suited for cool lands in which rain falls often during most of the year. From what you already have learned about western Washington and Oregon, would you expect these kinds of crops to grow well in the valleys of Puget Sound and the Willamette?

Find Spokane, in eastern Washington (Fig. 27). Notice the high plains west and south of Spokane. There are many farms in this district. The wheat lands which you see in Figure 53 are near Spokane.

Figure 52 *By courtesy of the Portland Chamber of Commerce*

Figure 53 *By courtesy of the Spokane Chamber of Commerce*

How does the rainfall map (Fig. 33) help you to explain why men choose to grow wheat on many farms of eastern Washington?

Find a place on the Columbia River due east of Seattle. A tributary which flows eastward from the Cascade Mountains joins the Columbia near this place. In Figure 54, you are looking across the valley of this tributary. For what do people use their farm lands here? If you look closely in the lower right-hand corner of the picture, you can find little ditches between the rows of trees. They help you to explain how the people in this part of Washington manage to have orchards although there is not enough rain to make them grow.

On the map in Figure 27, find San Francisco. Find the bay near San Francisco. Find two rivers that flow into this bay, one from the north and the other from the south. What does the map show you about the height of the land near these rivers? People speak of the valleys of Puget Sound, the Willamette Valley, and the Valley of California as the Pacific Coast valleys. What kind of work would you expect to find carried on in many places in the Valley of California?

Find, on the map in Figure 27, a lowland along the coast near Los Angeles. Find another lowland not on the coast and touching the southern boundary of California. Figures 6, 55, 56, and 57 show uses to which some of the lands in California lowlands are put.

Directions for reading. — From the following paragraphs, check as many as you can of your answers to the questions you have just studied. Try also to find: (1) Where other farm lands of the West are. (2) For what crops men use western farm lands, and why. (3) Where water for irrigation

By courtesy of the Spokane Chamber of Commerce

Figure 54

is found, and why it can be had in those places. (4) Any other facts that help you to understand about farming and grazing in the West.

Pacific Coast valleys of Oregon and Washington. — Suppose you started northward toward Portland along the road you see in Figure 52. Before going far past other fields, orchards, and woodlands much like those in the picture, you also would see acres of loganberry bushes. During the picking season, you would find many people busy gathering the berries, and many others working in fruit-canning factories. Here, too, although there is less rain than on the forest-covered mountain slopes near-by, gentle rains fall often in all months except July and August. The winters are mild, and the summers cool. Loganberries, raspberries, and other bush fruits thrive in such an even, mild climate. Moreover, in many parts of these valleys there are soils that are well suited for these fruits. The berries grown there are, for the most part, large, juicy, and well flavored. Both in the Willamette Valley and farther north along the east coast of the Sound much land is used for growing them.

On a trip northward along the Willamette to the Columbia and on through the Puget Sound valleys to the northern boundary of Washington, you also would see many fields of grass and clover. Grass there stays green throughout the winter. Oats and potatoes also thrive in these cool, moist districts. Although enough rain falls for such crops, there

Figure 55

By courtesy of the Sacramento Chamber of Commerce

is not so much that some kinds of wheat cannot be grown, and in the Willamette Valley you would see large fields of wheat. Some of the oats and wheat, however, is not grown for grain. It is cut, instead, for hay before the grains are ripe. Does not the thought of this grass and hay suggest cattle to you? As you would expect, you see many dairy cows on these grasslands, and many butter factories in these northern valleys.

Vegetables of various kinds, too, are grown by the farmers of these districts, but most of them are used on the farms. Other crops which the farmers sell, however, come from their orchards of plums (prunes), cherries, apples, and pears. You may think, then, of the Pacific Coast valleys in Oregon and Washington as cool, moist lowlands, many parts of which are especially suited for the raising of grass, hay, certain kinds of fruit, and dairy cattle.

High wheat lands and orchards. — In eastern Washington and the edge of northeastern Oregon there is a vast area of high plains which are colder in winter, warmer in summer, and have less rainfall than the western valleys. Much of the area is bare, but in many parts of it the soil is rich, and wheat, which does not need so much rainfall as most other grains do, is widely grown. For miles and miles, you ride through bare plains or great wheat fields, one after the other. In Figure 53, the machine at work in one of these fields is both cutting the wheat and separating the grain from the remainder of the plant. Such a machine will cut thirty to forty acres a day. Tractors, instead of horses, now are often used for power. Only in a region of many large, nearly level fields would it pay to use such heavy machinery.

Did you ever see at one time so many apple trees as you can see in Figure 54? This picture was taken in Washington, near the eastern edge of the Cascade Mountains, where there is little rainfall. However, the abundant rain and snow that fall in the Cascades help to feed the stream that flows in this valley, and men use water from this stream to irrigate their orchards. In the high lands which border the wheat country of eastern Washington, there are many other valleys, somewhat like that in Figure 54. In such valleys of eastern Washington, Idaho, western Montana, and eastern Oregon, there are millions of acres of land which, like that in Figure 54, is irrigated. In some of the valleys, much of the land is used for orchards. The trees commonly are planted

By courtesy of H. C. Tibbitts

Figure 56

thirty feet or more apart, so that they will not shade one another. Each tree must receive an abundance of sunshine if its apples are to be of the best color, size, and flavor. Do you see, then, how the clear, sunny skies of these irrigated valleys favor the growing of high-grade apples? Perhaps you have eaten apples, prunes, or other fruit that came from these orchards even if you live far from them, for apples and other fruits grown there are shipped to distant markets. The land in many of these valleys, however, is not used for orchards, but for growing alfalfa. This is a plant, somewhat like clover, which grows especially well on irrigated land, and is used for hay.

As you think of the farms of eastern Washington and Oregon, then, do you "picture" the two kinds suggested in Figures 53 and 54? Do you think of (1) the wheat farms in the high plains and (2) irrigated orchards and alfalfa fields in scattered valleys?

California fruit farms and ranches. — In one way the Valley of California, or "Great Valley," is like the Pacific Coast valleys in Washington and Oregon, for it is a land of many lowland farms. In much of the valley, however, little rain falls. In this way it is like the farmed valleys of *eastern* Washington and Oregon. Most of the rain comes in the winter time, and the summers are dry. At the southern end of the valley, as you would expect, the growing season is somewhat longer than in the northern end.

Of what lands do rainy winters and long, hot, dry summers remind you? What plants do they suggest to you? (*Journeys in Distant Lands*, p. 82.) Which of them do you find in Figure 6? This picture was taken in the southern part of the valley. What in the picture suggests much sunshine? If you were to go through the farm lands near-by at the right season, you could see the ground between the rows of grape vines almost

Figure 57

covered with trays of raisin grapes which had been spread out to dry. The largest raisin district surrounds the city of Fresno (Fig. 27). The vineyards there are irrigated, for they need much water during the spring and early summer, and almost no rain falls on them then. The water for irrigation is led in canals from a large, snow-fed river which rises in the high Sierras to the east. The vineyards require much attention during most of the year, but the busiest time is the picking season. This begins toward the end of August, and continues through September. As the grapes are picked they are put in trays to cure. In the brilliant sunshine and dry air the water in the grapes evaporates, and the juice is changed into sugar and other solids. The bunches of grapes are turned over during the time the trays are spread out on the ground, so that both sides will have been exposed to the sun. When the grapes have reached a purplish-brown color, the trays are stacked, so that the final curing will take place slowly in the shade. This gives raisins of better grade. If, as happens on rare occasions, rain threatens while the trays are spread out, everyone works hard to get them stacked and covered before the rain starts. At such times the children sometimes are dismissed from near-by schools, so that they can help save the crop. California produces more than nine-tenths of the raisins used in the United States.

Near Los Angeles, where the picture in Figure 56 was taken, much of the lower land is used for orange orchards. Here and in the southern part of the Great Valley there is less danger of frost than there is farther north. Does this picture not remind you of Figure 54? If you look closely, however, perhaps you can see that the trees in the two pictures are not alike. The water for some of these fruit farms must be brought to them in ditches across miles of desert. Others are irrigated by water pumped from under ground. If you were to drive through some of the lands in the southern part of the Great Valley or through the Los Angeles district, you also could see fig trees and olive trees here and there. Some are in orchards, and others border the roadways. Do you see, then, why *southern* California has been called a "Mediterranean land in the United States"?

Besides the grapes, olives, figs, and citrous fruits which recall some of the Mediterranean countries, California produces large quantities of other fruits and of nuts. In different parts of the Great Valley, in the valleys of the Coast Ranges, and in the foothills bordering the valleys, there are lands suited to many fruit and nut crops. Peaches, apricots, prunes, pears, and grapes grown for table use or for their juice are particularly important.

Following the fruit. — You might go, in the late spring, into lands northeast of San Francisco Bay, where you would find acres and acres of cherry trees. The cherries are just ready to pick, and there are so many of them that you wonder how the fruit growers can gather them all. The very next day, however, you might see scores of people leave a train at a near-by town and come to the orchards to work. Perhaps, too, many families would come in automobiles or wagons, and camp along the roadsides. You

would find that not only the men, but also many of the women and some of the children expected to help pick the fruit. Many of these families live during the three winter months in the cities near San Francisco Bay. You might find that some of them had left their winter homes early in March and had been at work cutting asparagus in the fields nearer the bay, or had been helping with other crops, ever since. During all this time they camped out of doors. From day to day other campers come to find work, and before long the cherries are picked. The pickers, however, do not return at that time to the cities.

As you already know, there are other fruits of various kinds to be picked later in different parts of the state. These fruits ripen at different times, and so the work of gathering them continues through many months. The workers move from place to place in order to help harvest the various fruit crops in different sections. Thousands of people in California lead this wandering, gypsy sort of life, "following the fruit." There are many good roads for them to travel on, and much of the time the weather is such that camping is pleasant. Some families spend nine months of the year working in different kinds of orchards and fields and in moving from one part of the state to another. At times, they spend several days on the road between camps. In the course of the year, they may travel long distances, and see many parts of California. The children, however, miss much of their school work, for they must change schools many times and are often absent. Then, too, much of the work which the children do in the fields and orchards is very hard for them. Nevertheless, hundreds of families earn their livings in this way. Many begin their work in the spring with the vegetables and fruits on the farms of the northern valleys and neighboring foothills and work their way toward the south, where they gather fruits like lemons and oranges that need a longer growing season. In this way, some of them reach the southernmost border of the state.

Other California farms. — In the unirrigated lands of the Great Valley, much wheat is grown, and even more barley. Barley is a grass grain which looks much like wheat, and which, like wheat, needs less water than most grains. It is even better suited to the kind of soil found in many parts of the valley than wheat is. Like "winter wheat," it is planted here in the autumn and harvested in the early summer. Part of it is cut for hay when green. Instead of using wheat, oats, timothy grass, and clover for hay, as is done in western Washington and Oregon, the farmers of California make hay mostly from barley and from alfalfa. The alfalfa hay field you see in Figure 55 is near Sacramento (Fig. 27). Many dairy cows of California, then, are not fed the same kind of hay as those of western Washington and Oregon because they are in a district of less rainfall. Rice is a *summer* grain crop which is grown on some of the irrigated lands north of Sacramento, in an area where the soils are well suited for it. In Figure 58 you see other irrigated lands near Sacramento. In the nearest field, beans are growing between rows of young fruit trees. From this district and from fields near the coast of southern California, come a large part of all the white beans and lima beans dried and sold in the United States.

In the Imperial Valley, as a part of the lowland near the Colorado River in southernmost California is called (Fig. 27), plants grow almost all the year round. Green vegetables raised here in the winter are shipped to places farther north and to the East. Lettuce is marketed in December and January; fresh peas are ready for sale by New Year's Day; and soon after, cauliflower, asparagus, and sweet corn also are sold. The picture in Figure 57 was taken in Arizona, but you could take one much like it in the Imperial

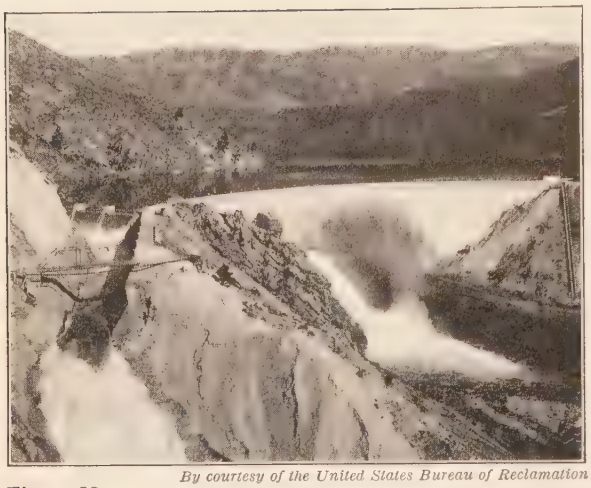
Figure 58

By courtesy of the Sacramento Chamber of Commerce

Valley, where there are hundreds of date orchards. In what kind of places in other lands have you found date palms growing? (*Journeys in Distant Lands*, p. 18.) Does the rainfall map (Fig. 33) show you what you would expect to find true, then, in the Imperial Valley? What does it show? Twenty months have been known to pass without any rain in the Imperial Valley. As you would expect, then, all of the farm lands are irrigated. In addition to vegetables and fruits, especially dates, grapefruit, and cantaloupes, much alfalfa is raised. A special kind of cotton that was brought from the dry lands along the Nile also is raised here.

You see, then, that in California you can find farms somewhat like those along the Nile; farms on which the plants of Mediterranean lands grow; and farms of many other kinds. Do not the farm lands of California, however, now suggest to you, first of all, *fruits* of various kinds grown with the help of irrigation?

Water. — As you think about the irrigated farms of California, do you not wonder where water enough for all of them can be found? On the rainfall map in Figure 33, find the lands in Western United States that have more than sixty inches of rainfall. Find these same places in Figure 27. You see that they are mountainous. Often winds blow from the Pacific Ocean across these lands. There is much moisture in this air, although you could not see it because it is in such tiny particles. The air which blows from the sea against the western side of the mountains of course cannot go through them, and so it is forced to move up their western slopes and over their tops. As it moves higher and higher, it is cooled. Cool air cannot hold so much moisture as warm air can, and, in passing up the mountains and over them, the air may be cooled so much that it cannot hold all the moisture it has. If so, some of the moisture falls as rain or snow. Although the air is cooled enough so that much rain falls in the Coast Ranges, there is still much moisture left in it. Moreover, it picks up more moisture between the Coast Ranges and the Sierra Nevada–Cascade ranges. As the air rises to cross the high Sierra Nevada–Cascade ranges, it is cooled again, and again loses much moisture.



By courtesy of the United States Bureau of Reclamation

Figure 59

By comparing the rainfall map (Fig. 33) and the map in Figure 27, you can see that in the mountains of southern California and in the Rocky Mountains, though there is more rainfall than in the near-by lower lands, there is not so much as in the mountains near the northern coast. This is because the winds which blow across those mountains bring less moisture to them than the winds from the ocean bring to the mountains near the northern coast, and in some cases also because the air is not cooled so much as it passes up their slopes and over their tops. Would you expect winds from the west to have as much moisture in them by the time they reach the Rocky Mountains as they had near the coast? Why? There are many other things to be learned before you can understand all the reasons why more rain falls in some places than in others. You should now see, however, one great reason why the mountainous lands of the West have a rainfall heavier than that of most of the neighboring lowlands. Since, in general, the winds that carry most moisture in this part of the United States come from the west, the western slopes of the mountains get more rain than their eastern slopes.

It is from the mountains of the West, then, that most of the water for irrigation comes. In California, most of it comes from the Coast Ranges and the western slope of the Sierra Nevadas, but some of the water used in the Imperial Valley comes in the Colorado River all the way from the Rocky Mountains.

Part of the rain that falls in the mountains, and some of the water from snows which melt there, runs directly off the surface into streams which flow down to the lowlands. Part of it, instead, sinks into the ground. Some of this water in the ground is used by the trees and other plants which grow there. Some of it which is not taken up by the plants moves slowly through the ground, and comes to the surface farther down the mountain side. Here it may form springs, or may just soak out, little by little, at many points. In either case, some of this water which comes from the ground runs on down the sloping surface to join the streams which flow to the lowlands. From these streams water can be led in canals or ditches to some of the lands that need it. One difficulty, however, is that sometimes the streams are dry or contain little water at the very time when the farms need most water. Sometimes, too, they are very high when the farms do not need water. What did men build across the Nile in order to hold the river water back so they could use it as they needed it? (*Journeys in Distant Lands*, p. 45.) As you would expect, many great dams also have been built in the West to store water.

Other irrigated lands. — Find Boise, in Idaho (Fig. 27). The great dam in Figure 59 is near Boise; it is the highest one that has been built in the United States. Men choose carefully the places in which they build such dams. Notice in the picture the sides of the valley both above and below the dam. At the place where the dam is built, the valley has walls of firm rock. The dam can be joined very solidly to such walls. Since the valley is narrow here, the dam is not very long. Since the dam is high, the lake of water which it holds back can be deep.

Not very far from this dam there are many

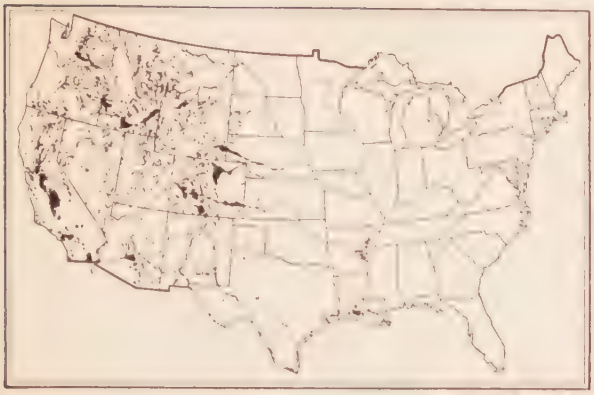


Figure 60. Irrigated lands

Figure 61 *By courtesy of Chas. C. Colby*

farm lands that are irrigated with water from this large reservoir. From the map in Figure 60, find where there are other irrigated lands, or "oases," in the West. Find those that are in north-central Utah. The picture in Figure 61 was taken in one of them. What in this picture suggests where the water for the field of alfalfa comes from? Notice in the picture the long row of tall, stately Lombardy poplars. They are striking features of the landscape in these Utah farm lands. Find on the map in Figure 60 the irrigated district near Phoenix, Arizona. This is one of the more famous and successful irrigated districts in the West. In most of the oases of the West, just as in the irrigated lands of the Valley of California, fruits, vegetables, sugar beets, and alfalfa, one or all, are grown.

Nearly all the farms in these irrigated lands are small. One reason is that it takes much more work to farm an acre of ground that is irrigated than it does to farm one which is not. Since each man can take care of only a small farm, the farmers do not live far apart, even where each one lives on his own farm. In some places, the farmers live in villages and go to and from their little farms or ranches each day. So, although the people of these western oases may be far from other settlements, the families within each oasis live near one another.

Grazing lands. — Do you remember the high, grassy valley (p. 43) across which you looked on the mountain climb you tried to imagine? Here and there throughout the western mountains are scattered many such high valleys that are used for grazing. Some are large, some very small. Try to picture another of these valleys. To reach it you drive eighty miles from the nearest railroad station in Nevada, first across a desert dotted with sagebrush, and then up a steep and narrow mountain road in one of the Great Basin ranges. Finally you come out upon the flat floor of a great valley, in which there are many hundreds of acres rimmed in by mountains. You see at once the ranch house and a cluster of other buildings near, but you look in vain for sheep or cattle. The valley plain seems deserted. You drive on across it. In some parts there is only scattered sagebrush, just as in the lower desert lands you crossed, but other parts are dotted with bunches of dry, brown grass. Here and there small willow trees border the little stream that winds across the plain, and along its banks there are some fields of alfalfa. Finally at one place close to the mountain rim, you spy a few cattle. You now see, too, some distance ahead, a covered wagon, and before you reach it, several cowboys have gathered there. It is the cook's wagon, and the cowboys have come for their noonday meal. This over, they gallop off again in various directions into the higher valleys in the mountain rim. It is August, and most of the cattle are still grazing in the smaller, higher mountain pastures. Before long, they

Figure 62 *By courtesy of the Denver and Rio Grande Western Railroad*

will begin to return to the large valley, and there will be hundreds of them. It may take the cowboys several weeks to gather them in from all the summer feeding grounds. After they are rounded up, some will be sorted out and driven down to the railroad to be shipped away and sold. Others will feed through the winter on the grasses of the large valley and on hay from the fields of alfalfa you saw along the stream. Many of those driven to the railroad will be sold to farmers in the oases. On the alfalfa which the farmers have raised there, these cattle will be fattened before being sent on to market.

Sheep and goats can find a living even in drier places than cattle can. In many places in the West, after the sheep are sheared in the spring or early summer, the herders start with them for higher pastures, in some cases more than a hundred miles away. They must follow routes along which they can find water to drink. They move slowly, for the animals must pick up a living as they go. The sheep feed not only on the scattered bunches of grass, but on many desert weeds and shrubs. In Figure 62, you see a flock of sheep starting down from one of the high mountain pastures. About what time of year, then, do you think the picture was taken? By pasturing sheep and goats (Fig. 1) in this wandering way, men use thousands of acres of land in the West that are valueless for other things.

Check exercise. — What did you learn about western farms and ranches by following the directions for reading?

For your notebook. — A dam such as that in Figure 59, the reservoir it helps to form, the water it holds back, the canals by which water is carried from the reservoir to farm lands, and the farm lands to which the water is carried are called all together an *irrigation project.* The United States government has helped to irrigate much land in the West. If the government builds the dam, canals, and other necessary works, the project is called a "government irrigation project." The irrigation, or "reclamation," projects shown in Figure 63 are government projects. How many are there? Make in your notebook a list of the states having one or more such projects, and give the list a fitting title.

Copy in your notebook the following sentences: "Here and there amid the mountains and deserts of the West there are fertile lowlands and some higher plains and valleys where enough water may be had for farming. In some such places enough rain falls for certain crops, but many farms must be irrigated. Water for them comes largely from the mountains, where much of the rain falls. Some western farm lands are much nearer the equator than others. Some have much sunshine, some little. Some have long summers, some short ones. Some are near shipping points on railroads, while others are far from them. Because of such differences, many kinds of crops are raised. Most of the irrigated farms are used for alfalfa and for various kinds of fruits and vegetables. On the drier, unirrigated farms, much wheat and barley are grown. On many lands of the West that are unfit for crops because they are too dry or too cold, enough grass grows so that they may be used for grazing cattle, sheep, or goats. The farming and grazing lands of the West, like the mining districts, are scattered."

Suggestions for extra work. — Make a scrapbook collection of magazine advertisements of products of farms and ranches in the West. Perhaps you can find advertisements of some farm and ranch products of each of the western states. To which states do you think most of them will refer? See if you can explain why each of the things you find advertised is produced where it is. If you cannot, it may be helpful to read again some of the preceding pages, or you may find the explanation in some of the readings listed on page 283.

Try to make a model in a sand pan of the place shown in Figure 59, so that you could use it to help you explain why the dam was built at that particular place.

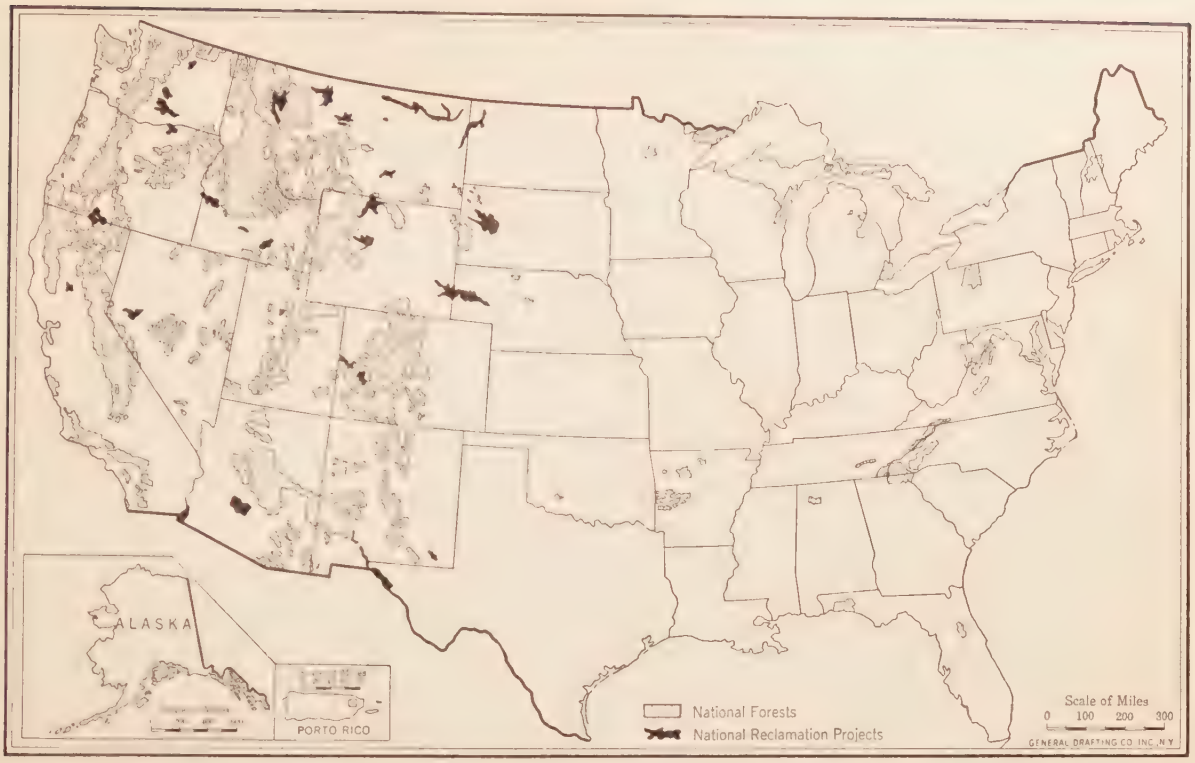


Figure 63. National Forests and National Reclamation Projects

After U. S. Dept. Agr.

By courtesy of the Union Pacific System

Figure 64

Changes and Exchanges

Where men build roads and cities. — In order to get the many different kinds of things they need, the people who live in the West depend upon exchanging or trading products with one another and with the people of other parts of the world. Show why the people who live, for example, in the town in Figure 36 must do this. It is very helpful to a town, in making such exchanges, if a railroad passes through it. However, it is much harder to build railroads to some places than it is to others. From Figures 64 and 65, what reasons can you see why it is harder and costs more to build and run railroads in mountainous lands than in nearly level lands? From what you learned about Swiss railroads (*Journeys in Distant Lands*, p. 92) and from Figures 64 and 65, tell what many railroads follow in mountainous lands. Places to which it is not too difficult and expensive to build several railroads may become important *centers of exchange*.

Directions for reading. — From the following paragraphs, find as many reasons as you can why western railroad routes and western trade centers are where they are. Many centers of *exchange* are also centers of *change*. Find out from your reading what this means and why it is true.

By courtesy of the Denver Tourist Bureau

Figure 65

Railroads of the West. — As Figures 64 and 65 should suggest to you, men must solve many difficult problems in building railroads among mountains. In the story of the Alps, a mountain pass was described. (*Journeys in Distant Lands*, pp. 87–88.) In deciding where to build railroads across the western mountains, men search for good passes. Even some of the best passes, however, are in very high places. Engines cannot pull trains directly up very steep slopes. One way, however, to get up such a slope is to wind, or zigzag, instead of going straight from the bottom to the top. The railroad in Figure 65 does this. Find the train that is lowest in the picture. Follow with your pencil along the tracks over which this train will go till you come to another train. Do you see how much higher this second train is than the first one? This shows you how much a train climbs in going round this loop. Have you ever climbed a steep place in this winding, zigzag way? To avoid going over some high places, tunnels for the railroads have been cut through some western mountains. In other places, deep cuts, like tunnels without tops, have been made. Along mountain routes there are not only high places to be cut through, but places to be bridged or filled in. Find in Figure 65 both bridges and fills. In the higher parts of the mountains, winter snows often threaten to block the way. In some places, they are cleared from the tracks by great snow plows (Fig. 66). In other places, for example in the Sierras between northern

Figure 66

By courtesy of "Municipal Facts," Denver, Colorado

Figure 67

By courtesy of the Denver and Rio Grande Western Railroad

Nevada and the Valley of California, the trains run through long snow sheds, such as that in Figure 67, that have been built to keep the snow off the tracks. Again, both in the mountains and in the more open highlands, board fences have been built here and there in wind-swept places along the tracks to catch snow and keep it from drifting on to the road. In many much exposed spots there are several of these "snow fences," one behind another, and some yards apart. Even these are not all the difficulties. For example, in some steep places there is danger from landslides. (*Journeys in Distant Lands*, p. 87.)

There are special railroad problems to solve in deserts, as well as in mountains. For example, sand sometimes drifts across the tracks much as snow does in the mountains. In some places in the desert, stones have been piled around the bottoms of telegraph poles to protect them against the wind-driven sand. Otherwise, the hard bits of sand, swept along the ground by strong desert winds, might in time cut the poles down. Locomotives need water every few hours, and in some deserts it is difficult and expensive to get it for them.

In spite of these many difficulties, a number of railroads have been built across the great belt of mountainous and desert land in the West. Is this belt narrower at the north, or at the south (Figs. 27 and 33)? In general, the least difficult routes across mountains and deserts are those which follow the valleys of streams. Find in Figure 27 three railroads which cross northern Idaho and enter Spokane. Find places in which these railroads follow valleys in crossing the Rocky Mountains. Find in the West all the other places you can where railroads follow river valleys.

In some cases, however, valleys or parts of valleys are avoided by railroads. For example, no railroad has been built in or across the Grand Canyon of the Colorado. What have you learned about the Grand Canyon that helps you to explain this (Fig. 46)? Where railroads cross the lower Colorado River, its valley is not a canyon.

Although many railroads have been built in the West, there still are ever so many places in it which are far from any railroad.

By courtesy of the Tacoma Chamber of Commerce

Figure 68

Pack animals carry goods along trails to scattered settlements in some of the mountains. Motor trucks help many places which have no railroads, as well as those which do have them, to exchange their products. To some places, many routes lead, and at these places cities have grown.

Centers of exchange. — There are few good harbors along the coast of the western states. At Puget Sound and San Francisco Bay, however, the ocean extends far inland, and along these shores ships can find good places to load and unload, sheltered from the great ocean waves that often beat along the coast. Fortunately, men also have been able to find good routes across the mountains to these arms of the ocean. So goods may be brought to them from many points by ships and trains, and several *centers of exchange* have grown along their shores. The larger ones are Seattle and Tacoma, San Francisco and Oakland. Notice on the map in Figure 27 the railroads that enter these cities. The only other large cities near the coast are Portland and Los Angeles. Notice the railroads that enter these cities.

The larger cities of Puget Sound. — Look again at the dock in Figure 32. You already have read about the lumber you see there. The square cases on this Seattle wharf are tin cans full of oil that have come across the Pacific from northern Asia. This vegetable oil was pressed from beans and other seeds. It will be emptied into large tanks, and shipped by rail to places in Eastern United States. On other wharves in Seattle you of course could see many different sorts of things waiting to be put on ships or trains. Among them are flour, wheat, fish, and fruits. What have you learned about Northwestern United States that helps you to see why these are among the products which are shipped from Seattle? Near these terminals where ships and trains meet, you would see men doing much the same kinds of work that you saw near the terminals in New York City. Just as in New York, there are grain elevators and warehouses near-by. Special machinery has been built to help with the loading and unloading. The machinery connected with one great elevator, for example, can load 20,000 bushels of wheat in an hour into steamships. Of course in a city where so much "exchange" work is done, many people live, and in other parts of Seattle you would find many houses, stores, factories, and other buildings.

In Figure 68, you see some of the homes and business buildings of Tacoma. The peak in the distance is the highest one in the Cascade Mountains. On clear days, it may be seen from both Seattle and Tacoma. You

Figure 69

By courtesy of the Portland Chamber of Commerce. © R. J. Gifford

see, then, that the people of these Puget Sound cities have beautiful scenery to enjoy as well as much exchange work to do.

Work in Tacoma is much like that in Seattle. Among the harbor sights of Tacoma are grain elevators, lumber yards, flour mills, shipbuilding yards, a fish dock, and a smelter. From your earlier study, which ones of these might you have expected? These sights suggest some of the important products which are handled on Tacoma wharves.

Oregon's largest city. — Ocean steamers also can come up the Columbia and Willamette more than one hundred miles to Portland. Here the land routes that follow the Willamette, Puget Sound, and Columbia River valleys meet ocean routes. The city lies partly east and partly west of the Willamette, and there are wharves along both the eastern and western banks of the river. The main terminals, however, are near the principal business district on the *west* side. East of the river, lumber yards, flour mills, grain elevators, and factories stand near the wharves, and farther back are many homes. Looking southeast across the city, as in Figure 69, you see another famous peak of the Cascades. In many ways, then, both the work and scenery of the largest three seaports of Northwestern United States are alike.

Cities of the Golden Gate. — Find on the map (Fig. 27) the entrance to San Francisco Bay. Where from this entrance is San Francisco? Where is Oakland? To which place is it easier for railroads from the north and east to come? In Figure 70, you are looking across the bay to its entrance. It is called the Golden Gate. Is San Francisco to the left or right of the Golden Gate as you look at the latter in the picture? Notice the sun. Was the picture taken in the morning or afternoon?

In Figure 71, you are looking east across the bay, from San Francisco. On the San Francisco side of the bay the water is deep close to shore, and large ocean ships can come alongside the piers. Most of the boats in the picture are ferry boats. People, cars, and freight are ferried between San Francisco and the cities along the east side of the bay. The ferry-boat stations across the bay are some distance from the shore, at the ends of long piers. This is because the water

By courtesy of the Southern Pacific Lines

Figure 70

© Ewing Galloway

Figure 71

near the shore there is shallow. Find these piers on the map of San Francisco in Figure 227 (p. 186). So while it is easier for railroads, except those from the south, to reach

Figure 72 *By courtesy of the Los Angeles Chamber of Commerce*

Oakland than San Francisco, the San Francisco shore is a better place for ocean ships. The ferry boats take people and freight to and from the railroads on the east side of the bay and the ocean ships that dock along the west side. As in Seattle, oils, lumber, and grain are among the products you would see being handled at these San Francisco docks.

Seaports of southern California. — Figure 72 is an airplane view of the harbor of the largest exchange city of the coast, Los Angeles. The business center of Los Angeles is twenty miles from the coast. Unlike Portland, it has no great river on which ocean ships can reach it. Nor is there near it a sheltered arm of the ocean like Puget Sound or San Francisco Bay. Since great railroads met here, and it would be very helpful to the city to have a harbor too, man helped to make one by dredging out channels in a small river and by building breakwaters to protect the harbor shores from the ocean waves. The city has been extended to the harbor along a narrow strip of land known as the "shoestring." Find the main part of the city, the shoestring, and the harbor on the map of Los Angeles in Figure 227 (p. 186). So rapidly is the city growing, that further harbor improvements are to be made.

In Figure 72 the ships just inside the outer breakwater are vessels of the United States navy. The small boats in the lower left-hand part of the picture are fishing boats. At the wharves in the lower central part of the picture there are two ocean steamships. Much of the lumber that is loaded on ships in Seattle is *unloaded* at wharves in Los Angeles. Near some of the wharves in Figure 72, there are round oil tanks. In these oil tanks there is not vegetable oil such as you saw on the Seattle wharf, but petroleum from the oil fields of southern California. It is waiting to be carried *away* in steamships. Lumber and petroleum are only two of a long list of items exchanged at this busy center. Of all the Pacific ports of the United States, Los Angeles now handles the greatest amount of

Figure 73 *By courtesy of the Union Pacific System*

shipping, and its trade is fast increasing.

San Diego, near the southern boundary of California (Fig. 27), is a much smaller center of exchange than Los Angeles, although it has a good natural harbor. It is not, however, as convenient a center for railroads to reach as are the larger ports farther north.

Inland centers of exchange. — Besides Spokane, the only large exchange center west of the Rocky Mountains that is not on or near the coast is Salt Lake City. On the map in Figure 27, notice the railroads that connect Salt Lake City with places east of the Rocky Mountains. Notice also the railroads that connect it with Los Angeles, the cities of San Francisco Bay, and those of the Northwest Coast. From the grazing lands, mines, and irrigated farms near-by, products can be sent, then, from Salt Lake City in many directions, and goods from many other trade centers can be brought back. In Figure 73, you can see part of the mountains in which much of the rain falls that helps to make the great oasis near Salt Lake City. The ever changing views of these mountains also help to make the city a pleasant place in which to live and work.

From these glimpses of western cities, do you not see, then, that at places where many routes meet, there is "exchange" work for many people?

Changes. — At most of the places to which it is convenient to bring many products to be bought and sold, it is also convenient to make such changes in the products as need to be made before they are ready for use. Such changes as smelting metals from ores, canning fish and fruits, cutting logs into lumber, and making butter have been mentioned already. In Figure 74, you are looking down upon factories and railroad terminals in Los Angeles. Notice the many tracks and cars in the lower left-hand part of the picture. The long buildings several stories high near the center of the picture are warehouses. In the lower right-hand corner are flour mills and other factories. Near-by are meat-packing plants. In Spokane, Tacoma, Seattle, and Portland much wheat from the grain farms of Washington and Oregon is used in making flour. Spokane not only is a center of exchange near the wheat fields, but also surrounds the falls you see in Figure 75. Some of the power furnished by this falling water helps to run its flour mills.

If you think again of the parts of the West where most of the rain or snow falls, you should be able to tell why there are in the western states many waterfalls that can furnish power. Unfortunately, however, many of these highland falls are far from the lowland centers to which it is easiest to bring materials to be "changed," or manufactured. In Figure 76 you see a power house at which the power from the water which is flowing through the great pipes on the hillside is being changed into electricity. This is sent by means of wires to factories in exchange centers many miles away. In this way, some waterfalls that are one hundred, two hundred, or more miles from cities can be used.

Figure 74 *By courtesy of the Los Angeles Chamber of Commerce*

Figure 75 *By courtesy of the Spokane Chamber of Commerce*

In some of the factories of the exchange centers of the West, goods are used which have come from distant lands, but in many of them men are at work making changes in products that come from western forests, mines, farms, and ranches. The following check exercise will help you see what some of these changes are.

Check exercise. — From what you have learned about the West, tell at least one reason for each of the following ten facts.

1. In Portland, Seattle, and Tacoma, many wooden boats are built.

2. Lumber products are worth more than any other products of mills and factories in Washington and Oregon.

3. The condensed milk canned each year in Washington is worth many millions of dollars.

4. The canning of fruits and vegetables of various kinds is one of the very important manufacturing industries of California.

5. More apples and berries are canned in Washington and Oregon than in California.

6. California ranks first among the states of the West in the canning of apricots, cherries, peaches, and pears, and in the drying of all fruits.

7. Smelting copper is the leading manufacturing industry in Arizona.

8. In Los Angeles and in some other cities and towns of California there are petroleum refineries.

9. In some factories in San Francisco, rice is cleaned and polished.

10. Slaughtering animals and packing meat are

By courtesy of the Southern Pacific Lines

Figure 76

important kinds of work in most of the large western centers of exchange.

What western exchange centers did you learn about by following the directions for reading? Try, with the help of the map in Figure 27, to explain why each of these cities is a good place in which to work at trading or manufacturing.

Other facts to explain. — How does Figure 29 help you to explain the following two facts?

1. On the streets of Portland or Tacoma you could see in front of some of the houses piles of wood which will be burned to heat these houses.

2. Lumber is the chief product brought by sea to Los Angeles.

What have you learned about the West which helps you to explain why many factories there burn petroleum as a fuel?

More water power is used in California than in any other state of the Union, save one. What have you learned which helps you to explain why much is used there?

Capitals and capitols. — You already have learned something about farms near Sacramento. In Sacramento itself one kind of work is done that is not done anywhere else in California, for Sacramento is not only a trading and manufacturing center, but also the *capital* of the state. In each state there is one city, the capital, in which there is a special building called a *capitol*. In this building, the governor and other officials of the state have their offices. There also are rooms in it where men who are sent from different parts of the state meet to make laws. The work done for the public by state officers and by the men who make state laws is called *state government work*. Since the men who make laws come from many different sections of a state, a city near the center of their state is chosen for the capital in many cases. Do you see why this might be the most convenient place for it? In some states, a city that is not near the center is chosen for the capital because more railroads lead to it than to any city near the center of the state. In other states, a city near the center of the part which is settled most thickly is chosen for the capital.

From the legend, find how capitals are shown on the map in Figure 27. Some capitals are large cities; others are small. Write in a column the names of the capitals of the states that are wholly or partly within the West. Write opposite the name of each capital the name of the state of which that city is the capital. With the help of the map in Figure 27, draw a star after the name of each capital in which more than 100,000 people live. In how many of these western states are the capitals very far from the centers of the states?

Figure 77 *By courtesy of the Citizens' Club, Chehalis, Washington*

Unless a state capital is a large and important city, such as those you starred above, or the capital of your own state, it is not important to remember its name. It *is* important, however, to know how to find what the capital of any state is, if you should need to know.

For your notebook. — Put on your outline map signs for the cities of the West which have more than 100,000 people. Do not put their names on the map. You should now know the name of each without having to label it.

Copy in your notebook the following sentences: "Most of the work of trading and manufacturing in the West is done in cities to which several routes lead. Things to be changed or exchanged can be carried to such cities from many parts of the West and from distant lands more easily than to other places. From the cities goods that have been manufactured in them, and other products, can be sent out to many places."

Suggestions for extra work. — Make in a sand pan models which you can use in helping you to explain some of the difficulties of building railroads in mountains and deserts.

A Look Ahead

Changes in work. — You now have seen where men do many kinds of work in the West, and some of the reasons why they do special kinds of work in certain places. This exercise will help you decide whether or not you think men will always be doing the same things there in the same places.

What work has been done in the place shown in Figure 77? Do you think that this is a good place in which to do more of such work? Why? Can anything be done to renew the supply of timber in this place? If so, what?

Figure 78 *By courtesy of the Citizens' Club, Chehalis, Washington*

In Figure 78 you see the land in Figure 77 a few years later. What has happened since the first picture was taken? For what is the land now being used? From the berry bushes that have been planted on this old forest land, in what part of the West would you expect this place to be? In order to get timber from this land, trees were destroyed. Must bushes be destroyed in order to get berries from it? If the bushes should die or be destroyed, could they be replaced more easily or less easily than trees? Do you think, then, that men will continue to use this land for farming longer than they did for lumbering, or not so long? Why?

Thinking about these questions should help you to see that some lands in the West probably will continue to be used in the future as they now are used, while others will not be used as at present.

Directions for reading. — From the following paragraphs, find what is meant by "mining" forests and fish, and what is meant by "farming" them. Also look for statements that will check your answers to some of the questions in the preceding exercise.

Towns that have short lives. — Did you ever hear of a town of many houses and few or no people? In the West there are some such towns. At one time, of course, people lived in the houses that are empty. They have moved away because they found better places in which to earn their livings. Most of these deserted places were once mining towns. So long as the near-by supply of ore lasts, or so long as it pays to mine it, there is work for men to do in these towns. Minerals, however, do not grow as plants and animals

do, and when the ore in one place is gone, man can do nothing to make more ore form there. So when all the ore near-by has been taken out, or it no longer pays to mine it, men have to do some other kind of work if they remain. If they wish to mine, they must go somewhere else. In some mining towns, many kinds of work can be done, but others are in places too dry or too cold for farming, and too difficult to reach to be good centers for trading. Some are in such barren places that not even grazing can be carried on near them. People in towns where the profitable ore has all been mined, and where no other kinds of work can be done, must move elsewhere to make their livings, and so the towns die.

"Mining" timber. — Some "lumber towns," too, have short lives. Suppose that in a village near a forest from which much timber is being cut there is a large sawmill. Most of the men of the village work in this mill, or help to sell and ship the lumber made in it. For a time, plenty of logs for the mill can be cut in the neighboring forest, but as the cutting goes on and on, trees there become fewer and fewer. Logs must be brought to the village from farther and farther away, and finally they have to come so far that it pays to move the mill to a place nearer the logging camps. The people in the village who worked in the mill must then move to the new sawmill town, or change their work. Destroying a forest for lumber is somewhat like destroying a vein of ore for the metal in it, and so it sometimes is spoken of as "mining" timber. Even if trees are planted again on land from which a forest has been removed, it takes the young trees many years to become large enough to be cut for lumber.

Towns that change. — By no means all the western towns that began as mining centers, and since have seen the valuable mineral deposits near them exhausted, have dwindled and died. Many of them have turned with success to other kinds of work, and so have continued to thrive. Some, for example, have become trading centers for farms opened up in the surrounding country; others have become pleasure and health resorts. In a similar way, some settlements that once depended on fishing or lumbering now depend on other work. They rely upon shipping farm products and supplying farm needs, on the tourist trade, or on other activities that developed as the older ones became less important or ceased entirely. Then, too, there are many western towns in which the original kinds of work still are carried on, and in which, from time to time, new kinds of importance have been added. Had you realized before that towns and cities may pass through various stages of development, just as people do?

Forest reserves. — As you can see from Figures 77 and 78, some lands from which timber has been "mined" are used for farms. They may be even more useful as farm lands than as forest lands. Many lands from which trees are cut, however, are not good for farming. They may, for example, slope too steeply. They may be in a place where it is too rainy, or too cold, for crops. Some lands, then, are better suited to growing trees than to any other use.

In some places great harm is done if the forests are destroyed. After a forest is destroyed on a mountain side, for instance, much of the rainfall that would soak into the ground if trees were standing, runs quickly off the surface into streams, and causes floods which do great damage. As full-grown trees are cut from such lands, young trees and seed trees should be left, so that forests will continue to grow there. Taking proper care of a forest so that the land produces crop after crop of timber, instead of only one, sometimes is called forest "farming."

In order to prevent the great harm that would be done if certain forests were destroyed, the United States government is

taking care of them. These lands are called national forests. Some of the states also own forest lands. Most of the forest "farming" that is being done in the West is done in these forest reserves. Often fires destroy forests even more rapidly than careless loggers do, and so the men who take care of the national and state forests try to prevent forest fires. The government also tries to protect the trees against tree diseases and against insects that injure forests. Although timber is cut from these reserves, they are not "mined," but "farmed." By looking at the map in Figure 63, you can see in what parts of the West the national forests are. Compare this map with that in Figure 27. Do you see that most of the national forests are on mountainous lands? These lands, for the most part, are not good for farming, and the forests on them help to keep the water from rains and the water from melting snows from running down the slopes quickly into streams. By causing the water to find its way gradually into the streams, the forests help to prevent floods in wet times and also to provide water for the streams in dry times. So, many western streams which rise in the mountains are more useful for power and for irrigation than they would be if the mountain forests along their upper courses were not preserved.

Other "farming." — Soils and fish, as well as timber, can be "mined." "Mining" soils means using them in such a way as to make them less fertile year after year. "Mining" fish means catching so many in a certain place that after a time very few are left there to be caught. On the other hand, soils can be farmed in ways that do not injure them. Then, too, materials called fertilizers can be put into soils from time to time, so that rich soils stay rich even when crops are raised on them year after year. In many places in the West, fish "farming" is being done. From time to time young fish from "hatcheries" are put into various lakes and streams, so as to keep up the supply there.

If any of the kinds of mining mentioned above is carried on in a place, some people there will have to leave sooner or later or change their work. On the other hand, suppose crops are raised without mining the soil. Suppose that, time after time, trees are grown for use, or that some other kind of "farming" is carried on in a given place. It is much less likely that people who live there will presently have to leave or change their work than it would be if the trees or the soil were being "mined."

The future of trade and manufacture. — Probably the more important centers of trade and manufacturing in the West will continue indefinitely to be centers for such work. However, even certain kinds of trading and manufacturing may become unprofitable in some places in which they are now successful. For example, the smelting of copper in certain Arizona towns probably would not be profitable if no more copper were mined in the region near-by.

Water power is something that *always* can be made to help in running trains and street cars, lighting buildings, providing power for factories, and furthering in other ways man's work. More and more it will be used for such purposes in the West, especially when the output of petroleum becomes less. Fortunately, the streams from which power can be had will not give out as oil wells must do; they always will be fed from rains and melting snows.

You see, then, that in many places in the West men will continue to make their livings as they do now, but there also will be many changes. The same thing is true of all other lands.

Exercises and Games

1. **Western work.** — Name all the important kinds of work which you have found people doing in Western United States. Name at least one place in which you have found men doing each kind. Read again carefully the sentences about logging and lumbering which you copied in your notebook. Make a list of the facts about Western United States which these sentences now suggest to you. Read

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Figure 79

each of the other paragraphs that you copied in your notebook, and tell what they now suggest to you.

2. **Matching states and pictures.** — What state or states does the picture in Figure 79 suggest to you? Do you think this picture was taken in one of the rainier parts of the West, or in one of the drier parts? Tell why. From the List of Illustrations, find in what state it was taken. Was this a state which the picture suggested to you?

In what state was the picture in Figure 55 taken? (List of Illustrations.) From what you now know about the West, name all the other western states in which you think pictures that would look much like this one might be taken. Look again carefully at the other pictures in the book which were taken in the West. Make a list of those which you think are much like others that might be taken in each of several western states. Put after each one in your list the names of all the western states in which you think similar pictures might be taken. Be careful not to include in your list pictures such as the one in Figure 6, for you found raisins mentioned only in connection with California.

If you have, besides those in this book, other western views, you might put them (with their titles hidden) where all the pupils in the class can look at them, and see if any pupil can name correctly the state in which each picture was taken. Of course, in many cases you cannot be sure. Tell why.

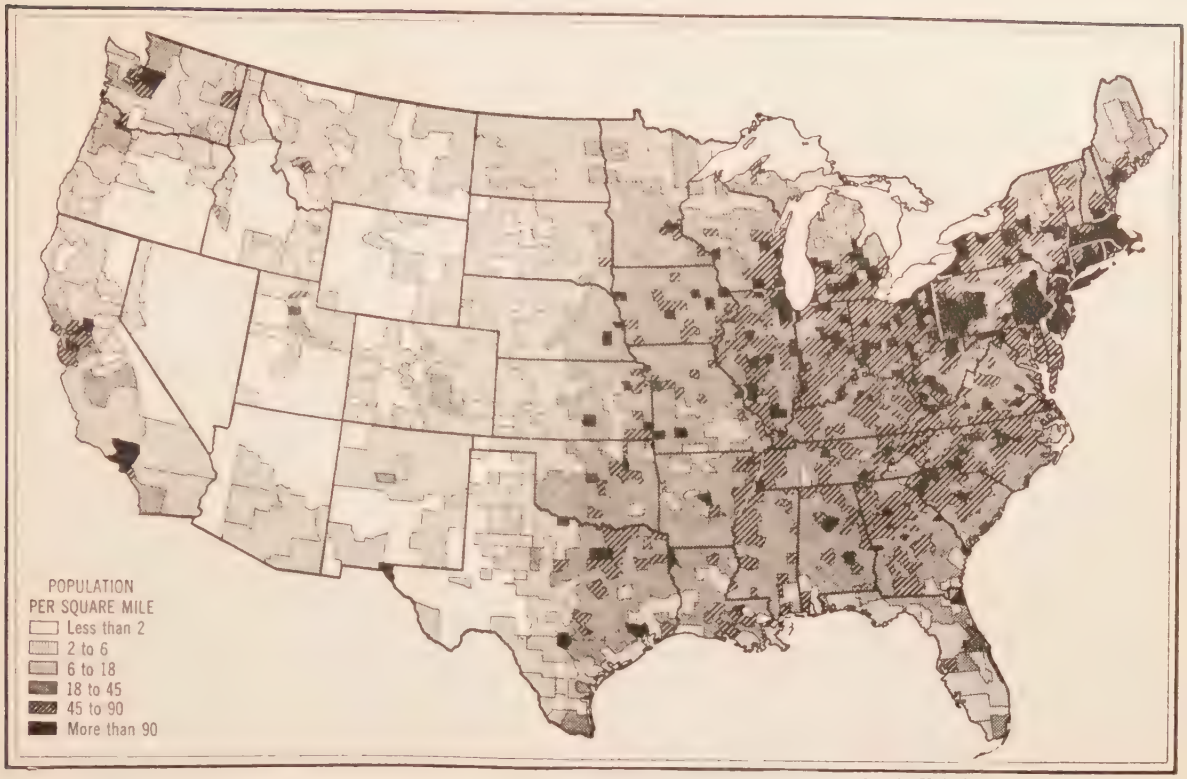
3. **Population problems.** — On the population map which you have made of the United States, find in which of the western states there are most people. Make a list of the things you have learned about this state which help you to explain why many people live there. Make a list of the reasons you have found why many parts of the West have so few people.

Compare your population map of the United States with the one in Figure 80. What does your map show about the population in Western United States that Figure 80 does not? What does the shaded map show that your dot map does not? Think of a square mile near your home. Perhaps your teacher or parents can help you find about how many people live in that square mile. Then notice what the deepest shade which you find in the West on the map in Figure 80 stands for. Notice the parts of the West in which you find this shade. Are there more people per square mile in these parts of the West than there are in the square mile near your home, or not so many? What things which you have learned about the West now help you to explain why these parts of it are more thickly settled than other parts are?

4. **Games to play.** — By this time you should know enough places in the United States so that the following games will be fun.

(1) To play "*initials*," the leader stands in front of the class and says, for example, "I am thinking about a city in the western states whose name begins with 'S'." He then calls some child's name, and waits while he counts to himself, "One, two, three, four, five, six, seven, eight, nine, ten." If the child has not answered by that time, the leader calls on another child and waits for the answer while he counts ten again. Suppose the second child promptly says "San Francisco," or "Sacramento." *If he can write the name correctly on the board*, he can become leader. If not, even though he named the place, the first leader continues. He might then ask for a river whose name begins with "C", a state whose name begins with "O", and so on. In order to get ready for this game, you might make a list of the names to be found on pages 30–71 and be sure that you know how to write each one correctly. You can change this game, too, by drawing beforehand on the blackboard a map on which all these things are shown, but not named. Then before a child can become leader, he must not only write the name he guessed correctly, but he also must point to the sign for that thing on the blackboard map.

(2) For "*an exchange race*," each person brings



After the United States Bureau of the Census

Figure 80. The distribution of population

to class a map on which he has put signs for all the mountains, rivers, states, and cities named on pages 30–71, but no names. Instead he has numbered each sign. At a given signal, maps are exchanged, so that no one works from his own map. At another signal, each child begins to make *on a separate sheet of paper* a list of the numbers on the map he has received and of the names for which the numbers stand. When the teacher calls "Time," each child gives the map back to the person who made it and also gives him the list to be corrected. The child wins who writes correctly the most names in the time given. The class may be divided into sides for this game, too. Then the side wins on which there are the most high scores. The same maps can be used many times for exchange races, and new signs and numbers can be added to them from time to time.

"Western" puzzles. — Each of the ten groups of words numbered below should suggest to you one word. Write in a column the words they suggest to you. The ten initial letters should spell the name of a state in which there are more people than in any other state in the West. (1) A useful ore mined chiefly in Arizona, Utah, and Montana. (2) A very important fruit crop of the irrigated valleys of eastern Washington. (3) A kind of work done in some of the rainier sections of the western states. (4) An interesting kind of people who live in scattered places in the West (Fig. 50). (5) A kind of work done along the Columbia River, on Puget Sound, and near other parts of the Pacific Coast. (6) A kind of fruit raised on thousands of acres in California. (7) Something which is very helpful to farmers, which is abundant in many mountainous parts of the West, but which is very scarce in many places there. (8) A state in which there are fewer people than in any other state in the West. (9) A practice which is followed in many of the drier farm lands of the West. (10) A crop raised on many irrigated lands in the West.

Another state name can be spelled with the first letters of the names of the following: (1) the northernmost Pacific state; (2) a national park in California; (3) another Pacific state; (4) the northernmost of the states partly within the West; (5) a state between (1) and (4); (6) a state just south of (5); and (7) a lake in the West. What is it?

Figure 81

By courtesy of the Santa Fé Railroad Company

A vast plain. — In Figure 81, you are looking eastward from a place in Colorado in the easternmost range of the Rocky Mountains. You see here part of the western edge of a vast plain that stretches with few breaks for hundreds of miles to the Mississippi River. Find this part of the United States on the map in Figure 82.

The following pages will help you to learn about this part of your country.

Something to do. — On the outline map of the United States on which you colored the West, draw a line along the eastern boundaries of Louisiana, Arkansas, Missouri, Iowa, and Minnesota. Color lightly the area between this line and the line which you drew to mark the eastern edge of the Rocky Mountains. Include in the area all of Texas. Choose a color different from that which you used for the West. Put on the color so lightly that names which you print later on this part of the map will show plainly.

A naming puzzle. — In the following pages, you will read first about the *western* part of the land between the Rocky Mountains and the Mississippi. As you read them and follow the directions in them, find a good name for this region which you can print on your outline map. Choose for it a name that will suggest the way in which much of the land is being used, and the kind of work which many people in it are doing. Later, you will find directions for printing the name on the map. There also will be directions for naming other regions east of the Rocky Mountains.

The Western Region

The land and its uses. — 1. On the map in Figure 82, find Kansas. Figure 83 was taken in the southwestern part of this state. How are men using the land shown in this picture?

2. On your outline map, put checks in eastern Montana, southwestern North Dakota, eastern Wyoming, western South Dakota, western Nebraska, eastern Colorado, westernmost Kansas, northwestern Oklahoma, eastern New Mexico, and northwestern and western Texas. A picture much like that in Figure 83 might have been taken in many places in the parts of the states just named. Of course, this does not mean that all the lands in those sections look like this. Even on lands that do look much like it, there are several different kinds of grasses. Does anything in the picture suggest to you why men are using this land in the way they are? If so, what?

3. In the pictures in Figures 84, 85, 86, 87, 88, and 89, how do you find men using some of the land? What reasons for such uses do these pictures and the map in Figure 82 suggest?

4. From the map in Figure 33 (p. 36), what do you find about this western part of the land between the Rocky Mountains and the Mississippi? Had any of the pictures already suggested this fact to you? If so, how? How does this fact help you to explain some of the work people are doing in this region?

5. In what general direction does the land just east of the Rocky Mountains slope (Fig. 82)? What large rivers can you find that help you to decide about the direction of slope? If you were to travel from the northeastern corner of Montana due south to the Rio Grande, about how many miles would you go?

6. What other questions, if any, would you like to ask about this region?

Directions for reading. — From the readings:

1. Check your answers to the questions you have just studied.

2. Get as many new ideas about the region as you can, to add to those which the maps and pictures gave you.

3. Make a list of all the ways you can find in which man's work in the region is helped or hindered by *rain*.

4. Make a list of all the ways you can find in which man's work in the region is helped or hindered by *wind*.

5. Make a list of all the ways you can find in which man's work in the region is helped or hindered by *native plants* and *wild animals*.

Glimpses of grazing lands. — The part of the United States just east of the Rocky Mountains sometimes is called the "cow

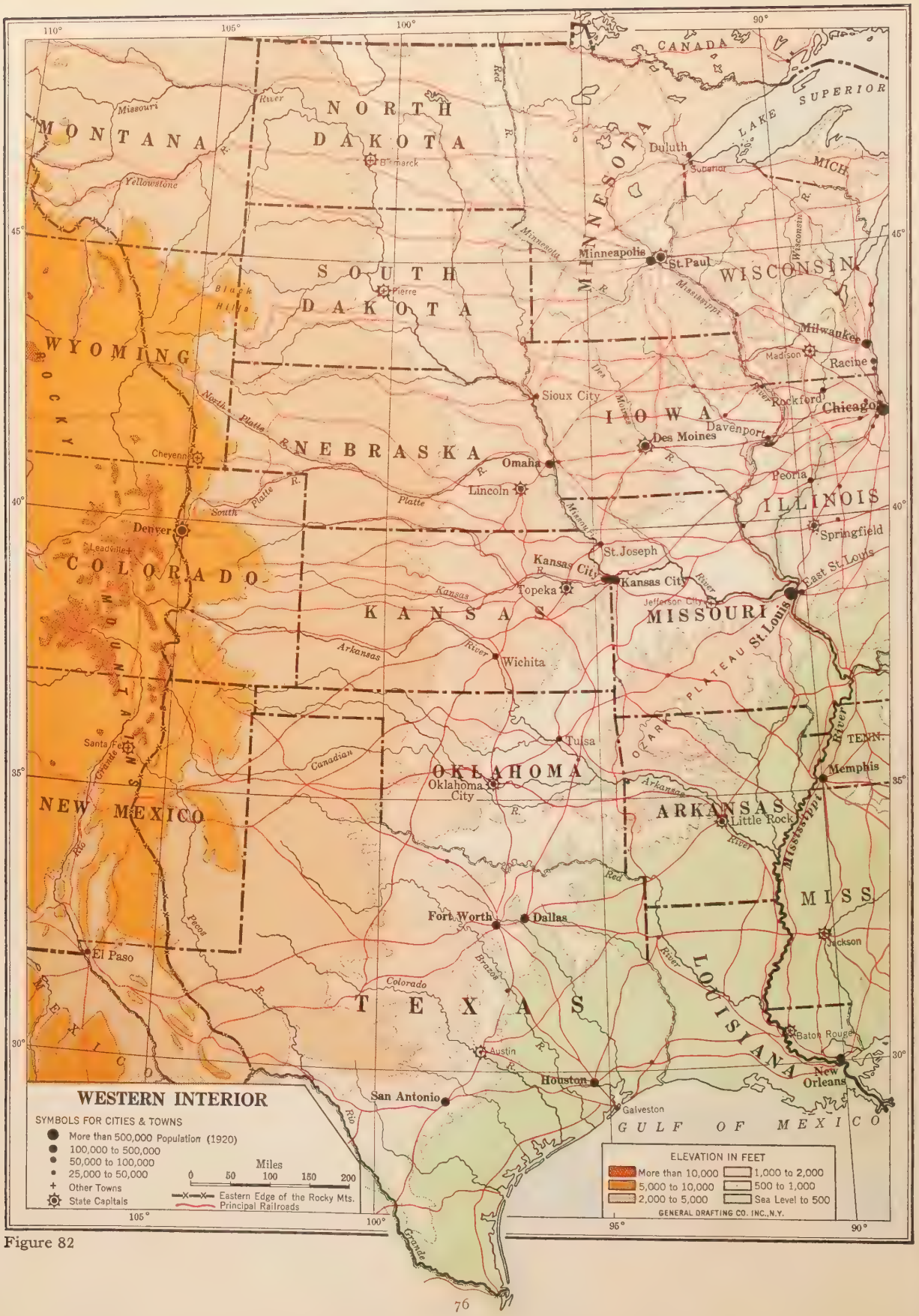

WESTERN INTERIOR
SYMBOLS FOR CITIES & TOWNS
More than 500,000 Population (1920)
100,000 to 500,000
50,000 to 100,000
25,000 to 50,000
Other Towns
State Capitals
Miles
0 50 100 150 200
Eastern Edge of the Rocky Mts.
Principal Railroads
ELEVATION IN FEET
More than 10,000
5,000 to 10,000
2,000 to 5,000
1,000 to 2,000
500 to 1,000
Sea Level to 500
GENERAL DRAFTING CO. INC., N.Y.
CANADA
MONTANA
NORTH DAKOTA
SOUTH DAKOTA
WYOMING
NEBRASKA
COLORADO
KANSAS
OKLAHOMA
NEW MEXICO
TEXAS
MINNESOTA
IOWA
MISSOURI
ARKANSAS
LOUISIANA
WISCONSIN
ILLINOIS
MICH.
MISS.
TENN.
LAKE SUPERIOR
GULF OF MEXICO
MEXICO
Bismarck
Pierre
Duluth
Minneapolis
St. Paul
Milwaukee
Madison
Racine
Chicago
Rockford
Davenport
Des Moines
Sioux City
Omaha
Lincoln
Peoria
Springfield
St. Joseph
Kansas City
Topeka
Jefferson City
East St. Louis
St. Louis
Wichita
Tulsa
Oklahoma City
Memphis
Little Rock
Jackson
Baton Rouge
New Orleans
Fort Worth
Dallas
Austin
Houston
Galveston
San Antonio
El Paso
Denver
Leadville
Cheyenne
Santa Fe
Missouri River
Yellowstone
Black Hills
North Platte
South Platte
Platte
Arkansas River
Canadian
Red River
Rio Grande
Pecos
Colorado
Brazos
Minnesota
Mississippi
Wisconsin
Iowa
Ozark Plateau
110°
105°
100°
95°
90°
45°
40°
35°
30°

Figure 82

Figure 83 *By courtesy of the Santa Fé Railroad Company*

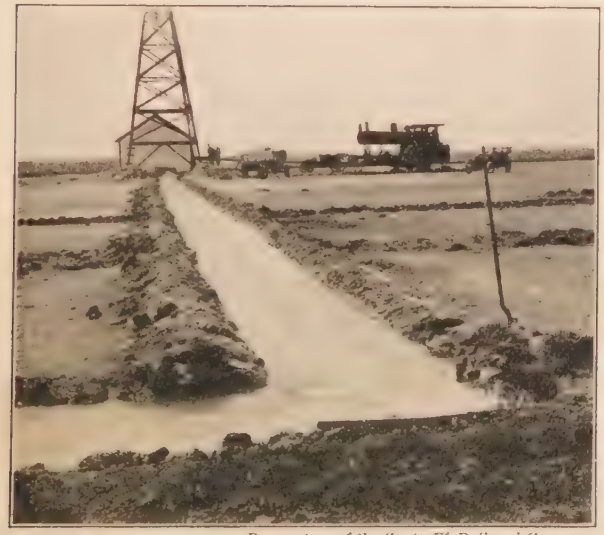


Figure 84 *By courtesy of the Santa Fé Railroad Company*

country." On millions of acres in this region there is a thin, scattered growth of grasses on which cattle, sheep, horses, and goats feed. The grazing lands shown in Figure 83 are in southwestern Kansas. In the picture you see, of course, only a small part of the sky line. Try to imagine that you are standing where the picture was taken, and that you are scanning the horizon. In every direction, treeless plains seem to spread on and on endlessly. Can you feel the wide sweep of such a view? In many places in these *Great Plains*, you can travel for miles across land that appears to be almost as flat as a floor. In such places, if the day is bright and the air clear, windmills, houses, clouds of dust, little clumps of trees, even people and animals can be seen from afar. The smoke of a train sometimes is visible at a distance of twenty-five miles. In Figure 81, the horizon in the dim distance is between fifty and sixty miles from the spot where the picture was taken. In Figure 90, you are looking westward to the Rocky Mountains, across seventy-five miles of plains.

You must not think, however, that all parts of the region are as nearly flat as those which are pictured here. Many sections are rolling, hilly, or rough, and a few are even mountainous. Find the Black Hills on the map (Fig. 82), in South Dakota and Wyoming. Their summits, clothed with dark forests, rise 2000 to 3000 feet above the surrounding

Figure 85

By courtesy of the Santa Fé Railroad Company

Figure 86

By courtesy of the United States Bureau of Reclamation

Figure 87

By courtesy of the Santa Fé Railroad Company

Figure 88 *By courtesy of the Santa Fé Railroad Company*

Figure 89 *By courtesy of the Santa Fé Railroad Company*

treeless plains. On the other hand, certain rivers have cut great valleys in the high plains. The lands shown in Figure 83 are not very far from the Arkansas River. At places, there are steep bluffs between the upland plain and the wide, smooth floor of this valley. Many sand dunes lie along its southern border. Nevertheless, you may think of most of the cow country as a vast, almost level land, sloping very gradually from west to east: a land of many cattle, few trees, much sunshine, wide views, and great, open spaces.

Size of the ranches. — Does it seem to you, as you look at Figure 83, that much land is being used for only a few cattle? In some parts of the grazing region, you might go for miles without seeing any cattle at all. In the rough, drier part of westernmost Texas, grasses and other plants on which cattle can feed are so scarce that each animal needs about forty acres on which to graze. At this rate, four thousand acres can support a herd of only a hundred cattle. Ranches there contain from 8000 to 300,000 acres. In most other parts of the region wild grasses and forage plants are more abundant, and so less land is needed to supply food for each animal. In the better grasslands of the cow country, fifteen acres furnish enough food for one "cow." Few ranches in the region contain more than 100,000 acres, but those containing less than a thousand acres are also few.

Water and windmills. — If you were to visit some of these ranches, especially on warm summer days, you probably would find many of the cattle crowded round the watering places. The water supply on each ranch

Figure 90

By courtesy of the Santa Fé Railroad Company

is as important as the supply of grass. Water for the animals is obtained from various sources. A stream from which the stock can drink may flow, for at least a short distance, through a ranch. It may be that the stream bed is dry much of the time, but in many such cases water can be reached by digging holes in the beds of the streams. On a few ranches there are springs or lakes, but on many of them wells are dug or drilled in order to get water. On the higher plains, some of these wells are several hundred feet deep. Windmills are built above many of them. Winds blow much of the time across the open plains. By turning the wheels of windmills attached to pumps, these winds help to lift the water to the surface. There it commonly is stored in tanks or earthen reservoirs. A single good well can supply water for more than a hundred cattle. In the ranch scene in Figure 91, notice the house, and the cattle gathered about the tall windmill. Windmills stand in or near most of the lonely-looking clusters of ranch buildings that here and there dot the landscape of the cow country.

Natural pastures. — Of course, ranchmen can raise no more cattle than they can provide with food and water. The simplest way of supplying them with food is merely to let them graze throughout the year on the natural pastures. The wind and sunshine cure the wild grasses on the ground, so that in winter they are much like hay. Even if snow covers the pastures, as it frequently does in the northern part of the region in winter, the strong winds presently sweep it off the grass in many spots. From time to time, too, especially in Wyoming and Montana, a warm, dry wind called a " chinook " blows from the west. It may cause the temperature to rise many degrees in a few minutes. Snows melt and evaporate as by magic when a chinook blows over them. For this reason, these winds have been called " snow-eaters." Many a time in the northern pastures, the lives of cold, hungry cattle have been saved by the coming of the chinook. Not only in the southern part of the region,

Figure 91

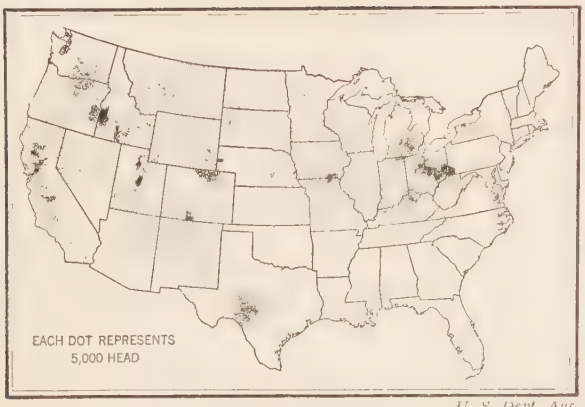
then, but also in the northern part, cattle can graze, even in winter, on the natural pastures. However, if the ranchmen depend wholly on these pastures for food for their cattle, they may lose many animals. At times, usually after sleet falls, a coating of ice covers the grass. Storms called " blizzards " may last for more than a week. During these storms, very strong, bitterly cold winds blow. They drive the falling sleet or snow with much force against everything in their path. People as well as animals have lost their lives in these blizzards. In a valley, or on the side of a hill, away from the wind, animals may find some shelter from winter storms, but if the ranch is on an unbroken plain, there is no natural protection for them. At such times, the cattle may be unable to get at the grass in the pastures for so long that, if there is no other feed for them, many die.

Not only winds, but also rains are at times helpful, and at other times harmful, to the pastures. Rains in spring and early summer usually are helpful, for the grasses are growing then, and need water. The rainfall is scant in this region. In most parts of it, as you can see from the map in Figure 33 (p. 36), less than twenty inches of rain fall during a whole year. Fortunately, much of what does fall comes when the grasses are growing. In some years, however, there are long dry spells, or drouths, at that time. In the years when pastures receive very little spring and summer rain, the grasses in them are very scarce.

Autumn rains, on the other hand, may be very harmful to the pastures. Every rain that falls after the grass is dry washes some of the richness out of it. If many rains come during an autumn, little nourishing food for the cattle is left in the natural hay of the pastures. Natural pastures, then, furnish much less food for cattle in some years than they do in others. In bad years they may provide for only one-third or one-fourth as many cattle as in good years. Then the ranchmen must feed their stock, or sell most of it.

Pasture-and-crop ranching. — In many cases, ranchmen have found that it pays them better to use part of the ranch land for growing hay and other food crops which need little rain than it does to use all the land for pasture. In the sand hills of western Nebraska, for example, the ranchmen leave the hillside parts of their ranches for pasture, and use much of the valley land between the hills for meadows. From these meadows they cut grasses to make hay for winter feeding. Many large ranches recently have been divided into smaller pasture-and-crop ranches.

There is much work of several kinds for ranchmen and cowboys to do on these smaller ranches. However, it is different in some ways from the work about which you can read in cowboy stories of earlier days. Then most of the cattle fed on unfenced pasture, or " range." On the fenced ranches, too, there are " round ups " before the spring branding, but it is not so difficult to bring together cattle that are fenced in as it is to round them up from the unfenced range. It takes much work, however, to keep the fences in good condition. The cowboys spend many days riding along them in search of broken places. They drive in or out the cattle that have strayed through the breaks, and then repair the fence. There still are wolves and other animals from which the herds need to be guarded. In recent years, some Texas ranchmen have built expensive wolf-proof fences to protect



U. S. Dept. Agr.

Figure 92. The distribution of sheep

their stock. These high and strong fences are made of woven wire with barbed wires at top and bottom which are intended to prevent the wolves from climbing over or scratching under the fence. Another animal enemy of the ranchmen is the prairie dog. Two hundred fifty prairie dogs eat about as much grass as one cow. By killing them, the grass they would have eaten may be saved for the cattle.

Most of the cattle of the region are raised for beef. In the autumn there is the work of sorting out those that are to be sold, and of driving them to places from which they can be shipped by rail. Raising cattle by the methods of the earlier days probably is more thrilling than the work to be done on the crop-and-pasture ranches. By the later method of ranching, however, land can support more cattle, and the cattle can be better cared for. The cow country, then, is not merely a grazing country. It is a *grazing and forage-crop* (feed-crop) *region.*

Sheep and goats. — There are not only cattle ranches, but also sheep ranches in the cow country. In summer, however, you might visit some of these ranches only to find that the sheep had been driven away, and would not be brought back before autumn. In other cases, the sheep are kept during the entire year on the same ranch, and so you could find them at home. In late spring or early summer you might meet, near the mountains, just as in lands farther west, a shepherd and his dog driving a flock of more than a thousand sheep to the higher grasslands or to pastures in the mountain forests. The sheep graze as they go, and so the band moves slowly. The dogs help not only to keep them from straying too far apart as they feed, but also to guard them from wild animals at night.

Sheep bite off the grass closer to the ground than cattle can, they need less water, and they can get along with no other water than that in the green grasses and weeds for a longer time than cattle can. For all these reasons they can live on lands on which cattle cannot. In eastern Montana, there are dry lands near the Missouri River and some of its tributaries. These and some of the other poorer grazing lands of the region are used mostly for raising sheep.

The map in Figure 92 is a " dot map " somewhat like the population dot map which you yourself made to keep in your notebook. Notice what each dot in Figure 92 stands for. What does this map show you about the distribution of sheep in this region? Find the part of Texas in which sheep are most numerous. Goats are raised there, too, more of them, indeed, than in all the other parts of the United States. In places in this section, dwarfed oak trees and other shrubs grow on the borders of the grasslands. The goats browse on the shrubs, and the sheep eat weeds and grass. These goats are raised for their fleece. Much of the fleece is used to make a kind of cloth called mohair.

Sheep are raised as much for wool as for mutton. If you should visit a sheep ranch in spring or early summer, perhaps you might see the sheep being sheared. The shearing is done at that time because the fleeces are heavy then, and also because the sheep do not need such warm coats during the summer. On many ranches, the shearing is done by hand. Men called " shearers " go from place to place to do this work. A good

Figure 93 By courtesy of the Santa Fe Railroad Company

shearer can clip the wool from about a hundred sheep a day. Some shearers who begin their work in Texas and New Mexico early in the shearing season move gradually northward and at the end of the season are at work in northern Montana. Do you see why they shear sheep in Texas earlier than in Montana?

On some ranches, the shearing is done by machine. In some cases, too, the sheep are driven to a near-by railroad town from which the wool is to be shipped, and are sheared there instead of on the ranch. In this way, each sheep carries its own wool part of the way to market.

Perhaps you wonder now why the region was not called the cow and sheep country. It well might be, for in some parts of it sheep raising is more important than cattle raising. However, in the region as a whole, the chief work is that of cattle ranching.

Irrigated lands. — From the map in Figure 60 (p. 57), find what parts of the cow country are irrigated. In Figure 81, you are looking eastward across some irrigated fields in Colorado. Find in the distance the checkerboard pattern made by the irrigation ditches. Where do you think the water for irrigating these fields comes from? Much of the irrigated land of the grazing region lies in the wide, almost flat-floored valleys of some of the larger rivers that flow from the mountains eastward across the plains. The picture in Figure 84 was taken in the part of western Texas called the "panhandle." In it, you can see irrigation ditches filled with water pumped from a well.

In some of the irrigated farms, there are more than two hundred acres. Most of them are smaller. If you were to ride through the irrigated districts, you would find that much mixed farming is done in them. On some farms, you would find nearly all of the land used for sugar beets, or for sugar beets and alfalfa. On others, you would find a few acres of oats, a few of potatoes, some of rye, wheat, or corn, and probably as many acres of alfalfa as of all the other crops. Some lands in Texas, such as those shown in Figure 93, are used for fruit orchards. Even though these orchards are toward the southern end of the region, there sometimes is danger that little fruit will grow because of severe frosts late in spring. At such times heaters, like those in Figure 93, are burned to protect the orchards. In Figure 94, you can see cantaloupes growing on irrigated land in southeastern Colorado. Alfalfa and sugar beets, the crops you see in Figures 85 and 86, are the chief crops, however, of the irrigated farms in the ranching region.

Alfalfa. — Throughout most of the region, alfalfa is harvested at least three times a year. In the southern part, it may be cut four or even five times. Texas is nearer the equator than Montana is, and, as you would expect, it has a longer summer. What does the map in Figure 95 show you about the length of the growing seasons in these two states? Not only, then, are sheep sheared earlier in Texas than in Montana, because warm days come earlier there, but crops also can start to grow in the southern state before the beginning of the growing season in the northern one.

Find the North Platte River on the map in Figure 82. Is it nearer Texas or Montana?

Figure 94 *By courtesy of the Santa Fé Railroad Company*

In the valley of the North Platte, alfalfa is harvested about the first of July, the middle of August, and the first of October. The sunshine and dry winds cure the hay quickly, and in most cases it is stacked in the field instead of being put into barns. You can see such stacks in Figure 85. Compare them in size with the largest house shown in the picture. If many rains come after the alfalfa is stacked, some of it may be spoiled, but, in most years, there is little rain in this region in late summer and autumn. Strong winds are sometimes a nuisance at haying time. They help to cure the grass quickly, but they may blow the cured hay about so much that stacking is difficult.

Part of the hay is baled and sent to distant markets. Part of it is sold to near-by ranchers for their sheep or cattle. As in the irrigated lands farther west, many farmers in the autumn buy sheep or cattle from the stockmen, and during the winter fatten them for the spring market. In any case, the alfalfa grown in the region is used as food for stock.

By comparing the maps in Figures 92, 96, and 60, find *on the sheep map* the irrigated alfalfa section in northeastern Colorado. In southern Colorado. In central Utah. In southwestern Idaho and southeastern Oregon. In the Valley of California. This map shows how the sheep were distributed on January 1. Many of the sheep at that time of year are being fed on alfalfa in the irrigated districts, both in the plains region and farther west.

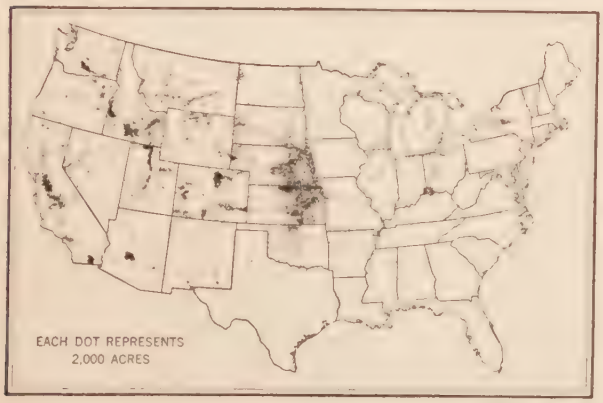
Sugar beets. — Notice on the map in Figure 97 the dots which stand for acres of sugar beets. For how many acres does each dot stand? Find in Figure 60 the largest section of irrigated land in northeastern Colorado. The largest section in southeastern Colorado. In western Nebraska. What does the map in Figure 97 show you about these three sections?

The field of sugar beets shown in Figure 86 is in southeastern Montana. The beet seed probably was planted in the field early in May. The seed usually is planted in rows about twenty inches apart. After the plants begin to grow, they must be thinned by hand. Also, the fast-growing weeds must be pulled often, and the fields must be watered frequently while the beets are young. By early October, the beets are ready to harvest. The harvesting, too, is done by hand in many cases. The tops may be cut off by a mower or scythe, or they may be slashed off by hand as the beets are pulled. Most sugar-beet farms, as you would expect, are small. There is so much work to be done that one man can take care of only a small field of the beets. Beet tops are good food for dairy cattle, and this is one reason why cows are kept on many beet farms.

The picture in Figure 88 was taken in southwestern Kansas, on October 10. The beets in the wagons have been brought in from the surrounding farms to be shipped to beet-sugar factories. The harvesting, loading, and hauling of beets may go on for several

Figure 95. Lengths of growing seasons

After the United States Department of Agriculture



U. S. Dept. Agr.

Figure 96. Acreage of alfalfa

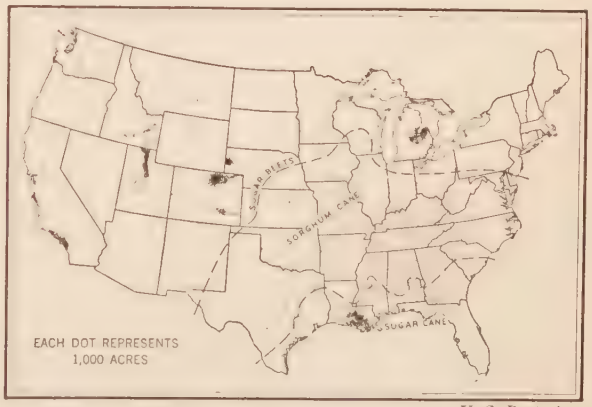


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Figure 97. Acreage of sugar beets and sugar cane

weeks in the autumn. The factory shown in Figure 98 is in southwestern Nebraska. In it, beet sugar is manufactured. Other such factories are found in various towns near the irrigated sections where sugar beets are grown. The pulp which is left after the sugar is taken out of the beets is good food for cattle, especially if mixed with alfalfa. Much of it is fed to the beef cattle of the ranches.

Other farms. — Even in this land where little rain falls, and where so much of the water that does fall evaporates from the ground and from plants, there are many farms that are not irrigated. In Figure 89 you can see how men break up the sod of some of the natural pastures for farm land. What do you see that helps to make it possible to use such big, heavy machinery in doing this work

Figure 98 *By courtesy of the United States Bureau of Reclamation*

(p. 51)? Wheat is raised on many farms in this region. In most cases, an acre in these drier lands does not produce so much of this grain as one in lands not so dry. However, by the use of up-to-date farm machinery, many acres can be cared for by one farmer. Most of the dry-land farms are larger than six hundred forty acres.

A group of plants called "grain sorghums" require even less moisture than wheat does. Figure 87 shows a field in northwestern Texas, in which Kafir corn, one of this group, is growing. These sorghums are used to feed stock. Brooms are made from the fibers in the heads of broom corn, another sorghum. There also is a special kind of wheat, called durum, which needs less rainfall than ordinary wheat. On many of the dry-land farms, such plants as these are grown.

On some farms in this region, too, the farmers use special methods in order to make as much water as possible soak into the soil and to keep it there for the use of growing crops. They may, for example, plow more deeply than farmers do in a region of more rainfall, and they may harrow after each rain, so as to keep the top soil loose and open.

On the better lands of the region, then, the kinds of farming that have been described can be carried on successfully. However, less than a tenth of all the land of the region is used for crops, and many of the crops raised are grown to feed the stock of the region, especially the cattle. It is therefore a land of stock, rather than one of crops.

Homes.—Notice carefully the farm houses in Figures 85, 86, 87, and 91. In any of these places, the thermometer on hot summer days may register more than 90°. If you lived in one of these houses, which do you think would be more welcome to you on such a day, sunshine or the breeze which blows so much of the time there? Why? If the ground happened to be dry, as it very often is, so that much dust was blown about by the wind, even the breeze might make it unpleasant in one way. On a winter day, in the northern part of the region, the thermometer might register many degrees below zero. The sunshine then would be welcome, but the wind might be most unwelcome.

These houses are built of wood. The lumber for them had to be brought, however, from places far away. Why? In many cases, settlers coming into this region use sod for their first houses, because it is at hand to use. Later, if they can afford it, they get lumber for frame houses.

Do you think you would have near neighbors or not, if you lived in one of the houses shown in Figures 85, 86, or 87? Perhaps you can tell now why the cow country sometimes is called "the land where everybody rides and nobody walks."

Villages. — Not all the people in this grazing and forage-crop region live far apart, however. The farmers of some of the irrigated districts live rather close to one another. Here and there, too, along the railroads, there are little towns, some of which resemble the one in Figure 88. In such a town you might find, besides the homes of the villagers, a general store, an implement and hardware store, a garage, a lumber yard, a feed store, a blacksmith shop, a bank, and perhaps a beet-sugar factory. Think why the needs of the people of the surrounding ranches and farms would help to make the town a good

Figure 99 *By courtesy of the Santa Fé Railroad Company*

place for the business suggested by each of these.

In almost every railroad town of the region, there also are sheep and cattle yards, and loading pens. If you were to visit them at the right season, you might see the loading going on, as in Figure 99. In most places, the busiest shipping season, especially for cattle, is the autumn. At that time many cattle are sent from the ranches to be fattened during the winter in the irrigated districts or on farms farther east. On some October days the towns are noisy with the bellowing of cattle or the baaing of sheep, and with the shouts of the loaders. Loading may go on day and night, as fast as cars can be supplied and filled. Even in the towns, then, there are many signs of the most important work of the region.

A final view. — Think of this region, and then of the places where people carry on the same kinds of work in the West. In much of the West, ranches, irrigated lands, and mining settlements are scattered widely. They are separated in many places by deserts, by mountains, by unsettled lands. This region is thinly settled (Fig. 80), but there are fewer parts without any settlers. Here, a greater part of the people are either raising stock or doing work that in some way is related to stock raising. Most of this region is one vast ranching land, with farm lands and villages scattered here and there among the ranches. Think carefully again of the reasons you have found why men use so much of the land of the region for pasture. Do you not see that the raising of beef cattle and of sheep probably will continue to be the chief work of the "cow country"?

Check exercise. — 1. Did you choose as a name for the region the words in italics on page 82? Tell why this is a good name for it. What kinds of work does it suggest?

2. Print neatly the name referred to in the last paragraph on the outline map on which you colored the area between the Rocky Mountains and the Mississippi. Place the letters carefully, so that some part of the name touches *each* of the parts of the states named in the second paragraph under the heading "The land and its uses," page 75. You need not keep the letters of the name in a straight line.

Caution: Do *not* draw an eastern boundary for this western region. As you learn more about the land between the Rocky Mountains and the Mississippi River, you will see why this would be unwise.

3. Compare one another's lists of the ways in which (1) rain, (2) wind, and (3) native plants and wild animals help or hinder the work of man in this region. Did anyone else find any ways you did not find? If so, add them to your list.

4. Look up in the dictionary "semi" and "arid." Is the word "semi-arid" a good one to use in describing this region? Why?

5. What facts which you already had learned about the West do the maps in Figures 92, 95, 96, and 97 show? Make a list of any facts about the West that these maps tell you which you had not learned earlier.

Suggestions for extra work. — 1. What have you learned about the western part of the land between the Rocky Mountains and the Mississippi that helps to explain each of the following four statements?

"At noon, on a very hot day, our train was in northwestern Texas, and as we looked from the window we saw a little group of men eating their lunch as they sat in the shade made by their coats, which they had hung, spread out, on the wire fence behind them. Farther on, a group of tourists sat eating in the shade of their automobile."

"The years when it is hardest for cattle to live all the time on natural pastures are those in which

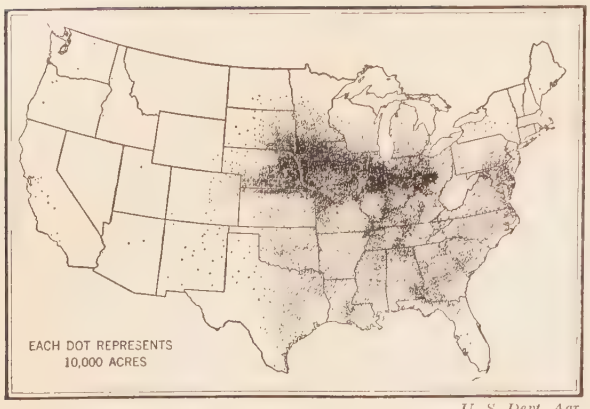

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Figure 100. Acreage of corn

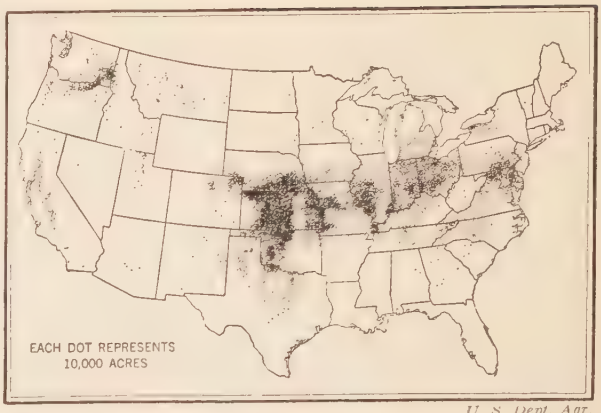

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Figure 101. Acreage of winter wheat

a dry spring and summer season are followed by a rainy autumn, and that in turn by a hard winter."

"It is more expensive to build sheds for hay or stock in this region than in many other parts of the United States."

"A calm that lasts for several days may cause much suffering to stock. Some farmers keep a gasoline engine to use at such times."

2. Try to make a collection of maps and pictures from which you can find other interesting facts about this region.

3. Make a list of words you could use in playing a "suggest game" about this region. (*Journeys in Distant Lands*, p. 19.) You might begin the list, for example, with "alfalfa," "windmills," and "goats."

For your notebook. — 1. Suppose you were a sheep-shearer and wanted to work at some time during one season in every state in the grazing and forage-crop region. Make for your notebook a list of these states, beginning with New Mexico, and putting them in the order in which you would work in them.

2. On the lower part of the page on which you make this list, copy the following. "*The Grazing and Forage-Crop Region:* Raising stock is the chief work in the western region between the Rocky Mountains and the Mississippi River. For food for their animals, the stockmen use the natural grasses, and also forage crops which can be grown in this region of scant rainfall."

The Eastern Regions

Eastward to the Mississippi. — 1. If you were to go due east from Montana to the western end of Lake Superior, what states would you cross? What ones, if you went from northeastern Wyoming due east to the Mississippi? From southeastern Wyoming? From central Colorado? From northeastern New Mexico? From southeastern New Mexico? From the map in Figure 82, do you think you would see many mountains on these trips, or very few?

2. From the map in Figure 33, find whether, on each of these trips, you would go into lands having more or less rainfall than those just east of the Rockies have.

3. Would you expect, then, to find toward the east that more or less of the land is used for farms than is the case in the region nearer the Rockies? More or less of it for grazing? Why?

4. East of the grazing and forage-crop region, there are two entire "work regions" and parts of three others between the Rocky Mountains and the Mississippi. Of course, in each region, men do many different kinds of work in order to make their livings, but in each one some particular kind or kinds of work are especially important. As you do the following exercises, find where each of these five regions is, and one or more kinds of work important in each.

Region I. — 1. On the outline map of the United States on which you printed "Grazing and Forage-Crop Region" print lightly, with a pencil, the number "1" in each of the following places: southeastern South Dakota, the southernmost part of Minnesota, eastern Nebraska, central Kansas, eastern Kansas, north-central Oklahoma, northeastern Oklahoma, northern Missouri, central Missouri, southern Missouri, northeastern Iowa, northwestern Iowa, central Iowa, southeastern Iowa, and southwestern Iowa. Notice that the parts of the states indicated by these numbers form, if taken altogether, one vast region. *Do not, however, draw a boundary line around this region or around any of those described below.*

2. Find this region on the map in Figure 100.

Figure 102. Acreage of spring wheat

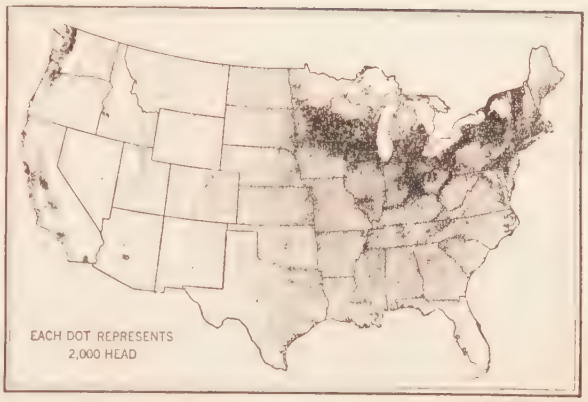

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Figure 105. The distribution of dairy cattle

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Figure 103. Acreage of oats

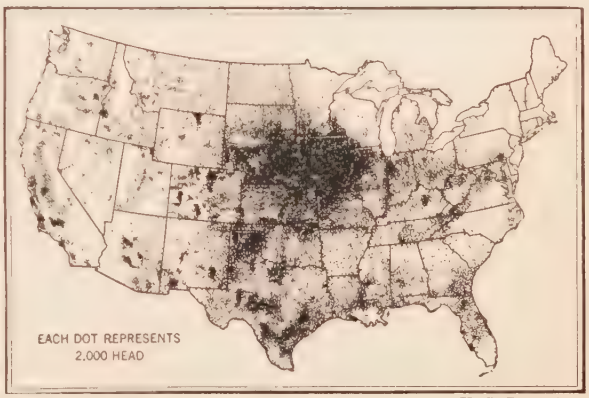

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Figure 106. The distribution of beef cattle

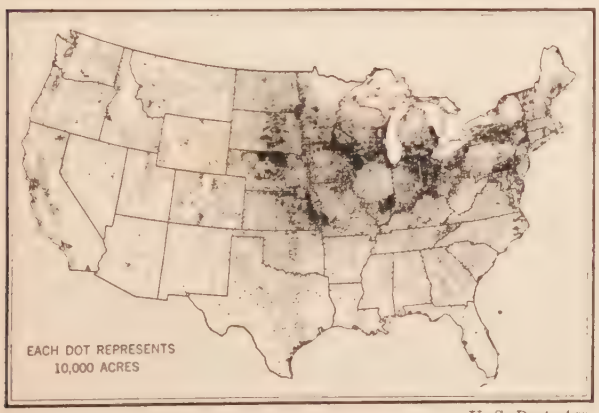

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Figure 104. Acreage of hay and forage

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Figure 107. The distribution of swine

Notice what each dot on this map stands for. This map tells you, then, one thing that you would see if you were to drive through this region. What is it? Find this region also on the maps in Figures 101, 102, 103, 104, 96, and 43. What other things do these maps tell you that you would see if you were to travel about in this region? Name one kind of work which, from your study of these maps, you think is of outstanding importance in this region.

3. The drawing in Figure 25 shows what you could see on a mile walk along a country road at one place in the heart of this region. Is this what you had pictured from your study of the maps? Which of the things shown on the maps in Figures

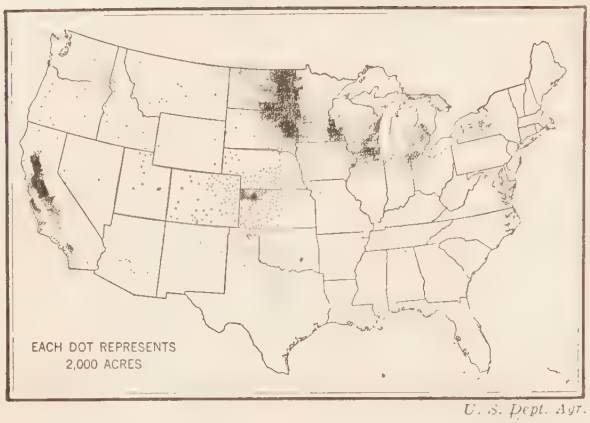

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Figure 108. Acreage of barley

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Figure 110. Acreage of flax, tobacco, and rice

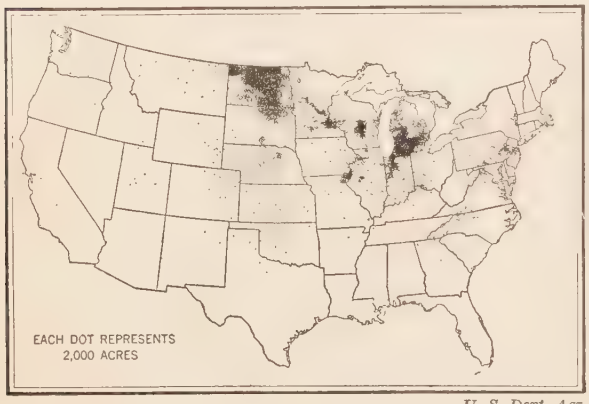

Figure 109. Acreage of rye

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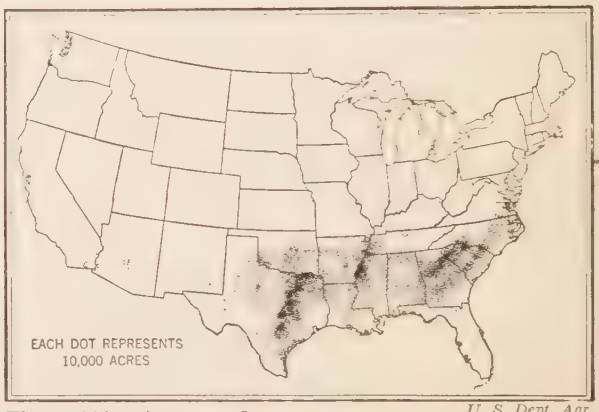

Figure 111. Acreage of cotton

U. S. Dept. Agr.

100, 101, 102, 103, 104, and 96 do you find in the fields along this mile of road? What, however, is grown in *most* fields which border the road? Suppose a walk of a mile were taken along a country road in central Kansas, in the southern part of this region. What do the maps named above lead you to think you would see in most of the fields there?

4. Find this region on the maps in Figures 92, 105, 106, and 107. What do these maps tell you about the region? Are you not surprised to find even more beef cattle here than in the grazing lands farther west? Can you account for this in any way?

5. Do you think of a word of five letters that would describe the kind of combined stock and grain farming which these maps suggest? If so, what one?

Region II. — On your outline map print " 2's " in northeastern South Dakota, central Minnesota, northwestern Minnesota, northeastern, northwestern, and southeastern North Dakota. Find this region on the maps in Figures 100, 102, 103, 104, 105, 106, 107, 108, 109, 110, and 92. After studying these maps very carefully, tell in what way you think this region is like Region I. In what ways does it differ? What reason for these differences do the maps in Figures 33 and 95 suggest to you? How would you describe the kind of farming which these dot maps suggest?

Region III. — In the northeastern part of Minnesota print on your outline map the number " 3." Find this region on the map in Figure 42. Find it on the map in Figure 29. These maps suggest the most important two kinds of work which you might see in this region. What are they? What, then, would you name the region?

Region IV. — On the map in Figure 82, find a point on the coast about half way between the southernmost point of Texas and the eastern boundary of the state. On the maps in Figures 97 and 110, find the lands which border the coast between that point and the eastern boundary of Louisiana. For what two crops do you find men using thousands of acres there? On your outline map, print four " 4's," two in Louisiana and two in Texas, to show districts near the coast where much land is used for one or both of these crops. This narrow coastal

Figure 112

strip is a mixed-farming region in which the work of raising rice and sugar cane is of great importance.

Region V. — Scatter " 5's " through central and northern Louisiana, Arkansas (save the northwestern corner), southern Oklahoma, and the part of Texas not already included in other regions. What do the maps in Figures 29, 111, 100, 101, 103, 104, 105, 106, 107, 92, and 43 show you about this fifth region? What ways do these maps suggest in which this region differs from Regions I and II? What reason does Figure 95 suggest for one of these differences? In what ways does this region seem to be like Regions I and II? What likenesses and differences between this region and Region IV are shown by the maps in Figures 97, 110, and 111?

Farm lands. — Farms make up much of the scenery in all save one of the eastern regions between the Rocky Mountains and the Mississippi River. The chief crops in the four farming regions are different. However, most of the farms of these regions are alike in that more than one product is raised on each. All four, then, are regions of *mixed* farming.

From region to region. — Find on the map in Figure 82 the railroad which runs from northeastern Colorado to Omaha, following much of the way the valley of the Platte River. Suppose you were to travel eastward across Nebraska along this route. You would pass through many irrigated districts and see many irrigation canals on the first part of this trip. Most of the irrigated valley lands are used for crops. Some of the uplands are cropped, too, while others are used for grazing. If you made the trip in early summer, you would be struck by the sharp contrast in many places between the brown, barren-looking hills of the valley sides and the green fields of the irrigated farms on the valley floor. The hay which the men in Figure 112 are hauling and stacking is alfalfa that was grown on one of the irrigated farms.

About half way across the state, you would come to the town near which Figure 113 was taken. Notice the row of trees along the side of this field of sugar beets. In fields sheltered by such rows of trees, strong winds do less damage than in places where they have an unbroken sweep. Less soil is blown about by them, and they are not so likely to break the plants down, or to dry them out.

As you continued eastward across Nebraska from this place, you would see no more irrigation canals. There still, however, are fields of sugar beets and of alfalfa, as well as grazing lands. But at the same time wheat fields and corn fields, which you would have noted here and there along the railroad from westernmost Nebraska, become more and more numerous. As you neared Omaha, you would find much of the land used for corn. Then, at last, you could not fail to realize that you had passed from the grazing and forage-crop region into the central mixed-farming region. However, the change is so gradual that you could not have told where you passed from the one to the other. There is no distinct boundary between them.

You would find it just as difficult in most other journeys from region to region to tell where you passed from one to another, although each region can be recognized easily at most places well within it. Do you not see, then, why in most cases it would be unwise to draw boundary lines between " work regions "?

I

Directions for reading. — From the following paragraphs try to add as much as you can to the " picture " which the maps gave you of Region I.

By courtesy of the Union Pacific System

Figure 113

Find all the ways you can in which men fit their work to the kind of country in which they live.

Views in the central mixed-farming region. — In the central mixed-farming region, you could travel long distances through slightly rolling, almost level lands, such as those which you see in Figures 114 and 115. Here and there along the roads stand clusters of farm buildings, many of them partly surrounded by clumps of trees. The large barns, the silos, and the tall windmills are more striking than the houses themselves. If you were to drive along the country roads, many of which are straight and follow north-south or east-west lines, you would be struck with the number of neat, well-kept farms. Villages, as well as farm houses, are far more numerous than in the grazing and forage-crop region.

Millions of acres are used, as are those in Figure 114, for growing corn, and millions are used for winter wheat (Fig. 115). By comparing the outline map on which you numbered the eastern regions with the maps in Figures 100 and 101, you will find that in the northern part of the region more land is used for corn than for wheat, but that in the southern part, especially in central Kansas and north-central Oklahoma, more land is used for wheat than for corn.

A farm puzzle. — As you read the following descriptions of two farms in the central mixed-farming region, decide which one is in the corn belt and which one in the winter wheat belt.

Farm A. June 15. — In this farm, which is owned by Mr. Smith, there are three hundred twenty acres. He has one hundred twenty acres planted in corn, forty acres in oats, forty in clover and timothy, sixty in wheat, five in potatoes, and the rest of his land is used for buildings, yard, barn lots, garden, and orchard, and for pasture for his hogs, horses, and cattle. There is so much work to be done on the farm that he hires two men throughout the year to help him.

In the early spring the men had much plowing to do, in order to prepare the fields for planting. In April, they planted potatoes and oats. They began planting corn the first week in May, but rains delayed their work, and the planting was not

Figure 114 *By courtesy of the International Harvester Company*

Figure 115 *By courtesy of the Chicago and Northwestern Railroad*

finished till June 2. Today the men are at work cultivating between the rows of corn to destroy the fast-growing weeds. The next four months will be, on the whole, the busiest season of the year for them. They plan to begin cutting hay the last week in June, wheat the following week, and oats before the middle of July. Then the threshing season will follow. Meanwhile, the corn must be cultivated again at least twice. Through the busy threshing season, neighboring farmers will help them, and they likewise will help their neighbors, so that each farmer's crops will be cared for at the best time, in so far as they can manage it. Fortunately, this rush season comes at the time of year when the days are long. They will begin work each day soon after sunrise and will work till dark, stopping only for meals.

In August, although some fields are to be plowed for sowing winter wheat, there is not so much pressing work to be done. Since they planted early potatoes, these probably can be dug late in August or early in September. In the first part of September, they will select and pick for next year's seed the best ears of corn. Later in the month they expect to cut the corn from thirty acres, and to fill their silo with

it. Late in September or early in October, they will plant their winter wheat. In early October they probably will cut and " shock " some of their corn. Much of it, however, they will husk from the standing stalks. In late October, the corn-husking season will begin, and it may be Christmas time before all of the corn is in the cribs.

Even during the short winter days, there will be much to do. The stock will require more attention than it did during the summer. Corn and other products which Mr. Smith then wishes to sell will be hauled to market, and manure will be scattered on the fields. There may be days when plowing can be done, and fences, harnesses, and implements probably will need repairing.

In the spring, after the stock have been fattened by the winter feeding, most of the hogs and cattle will be marketed. Probably by then Mr. Smith will have about two hundred hogs and a carload of cattle (about thirty) to sell. In addition to all this work, there are daily chores, such as the milking of cows, that have to be done the year round.

Farm B. June 15. — In this farm, which is owned by Mr. White, there are three hundred twenty acres. He has one hundred fifty acres in wheat, twenty acres in corn, forty that are partly in alfalfa and partly in prairie grass for hay, and ten in oats. The rest of his land is used for buildings and yard, for barn, poultry, and hog lots, and as pasture for his horses and cattle.

This is one of the busiest weeks of the year on the farm. In addition to the regular helper, an extra " header " crew of six men is at work cutting the wheat. One man is driving the header, a big machine which cuts off the heads of the wheat. A big wagon called a " barge " is hauled along at the side of the slow-moving header, and the heads of wheat are carried from the machine into the barge through a pipe which extends across the low side of the barge. As soon as one barge is filled, another takes its place, and the loaded barge at once is hauled to the place where the headed wheat is to be stacked until threshing time. It probably will take six days to cut all the wheat on this farm, and longer if thunder storms interfere. The work with the wheat crop will not end with the cutting. A little later the wheat must be threshed, and an extra crew of men again will be needed. On the farm there is a granary, in which the wheat will be stored. It will be hauled to town later, at times when other work is less pressing.

As soon as convenient after the wheat harvest, the wheat fields will be plowed for autumn sowing. The oats will be ripe by July 1, and Mr. White expects that by July 10 the alfalfa will be ready for its second cutting. By the last week in August, alfalfa probably can be cut a third time. Meanwhile some of the wheat doubtless will be hauled to market. The sowing of wheat is early October work. After that will come corn husking. Husking over, work will be lighter until spring, in spite of the winter feeding of stock. Then the men of the farm will be busier again: plowing land for spring crops, sowing oats in March, planting corn in April, taking care of the first cutting of alfalfa toward the end of May, and cultivating the corn several times before the new crop of wheat has to be cut.

Mr. White raises many chickens and turkeys for a special purpose. Chicks are hatched as early in the spring as the weather warrants. About a dozen hens with their chickens are put in a little hen house built on wheels. This house is wheeled to the alfalfa field, where the chickens feast on young grasshoppers. If grasshoppers are abundant in other fields, too, one or more hen houses will be hauled to them. If Mr. White did not use chickens and turkeys for this purpose, and fight the grasshoppers in other ways as well, they might destroy some of his crops. When the grasshopper season is over, he sells most of his poultry so that he will not have to feed so many fowls during the winter.

Farms of many kinds; rotating crops. — There are thousands of farms in the central mixed-farming region which are much like one or the other of the farms just described. Of course, they differ in size, and in the amount of land used for the various crops. Some farmers, for example, make raising hogs and fattening cattle their chief business. They are called stock farmers. They use most of their land for pasture. They may plant some of it in corn, or may buy from other farmers all the corn they need for feeding their stock. They ship in cattle that have been raised on the ranches of the cow country or of the West, and feed them till they are fat enough to market. On the other hand, many farmers have no cattle at all, except milk cows. Then, too, a given farmer does not use the same amount of land nor the same fields year after year for the same crop. For example, clover and alfalfa enrich the soil for other crops. Mr. Smith (p. 92) probably later plowed up his clover field,

Figure 116 *By courtesy of the Santa Fé Railroad Company*

Figure 117 *By courtesy of the International Harvester Company*

planted corn there, and used another part of his farm for clover. It is harder to get a good stand of alfalfa than one of clover, however, and good alfalfa fields are seldom broken up in less than six years after planting.

Farm pictures. — The picture in Figure 116 was taken in northern Kansas. This field is being cultivated for the third time.

The picture in Figure 117 was taken in northern Missouri. The corn binder is cutting and binding corn which will be stood in shocks like those in Figure 114. Would this work be done earlier or later in the year than the same kind of work would be done on Mr. Smith's Iowa farm? Would it be done about the same time as on the farm in Figure 116?

The picture in Figure 118 was taken in southern Iowa. Notice that the plow is

By courtesy of the International Harvester Company

Figure 118

By courtesy of the International Harvester Company

Figure 119

being pulled by a tractor instead of by horses. Many farmers in the wheat and corn belts now have tractors. The picture in Figure 119 also was taken in Iowa. What three signs of winter can you find in it? The corn plants which the men hauled in from the field are being fed into a shredder. This machine cuts up the leaves and stalks. They are carried through the pipe at the right of the picture into the barn, where they are stored for stock feed.

In a highland section. — Find what the map in Figure 82 shows about much of the land in southern Missouri. This land not only is higher than the surrounding country, but is so rough in many places that it often is called the Ozark Mountain country. Much of the land of the highland is wooded. In-

Figure 120. The distribution of cities

deed, there is more woodland than cleared land. Some of the land which is too hilly to be cultivated can be used for grazing. Even in the most out-of-the-way woods, the tinkle of bells attached to cattle or other stock to indicate their whereabouts can be heard almost anywhere. Corn is the chief crop, and that not needed as food by the people is fed to the stock. From time to time, part of the stock is driven out to market. In the hilly sections the main public roads follow the tops of ridges between the valleys, while private roads lead down from them to the farm houses hidden away in the valleys on either side. In general, the farms and farm houses of the Ozarks are poorer than those in most parts of the region. What other special kind of work in the Ozark Highland is suggested by the map in Figure 42? Some of the people of the highland make their living by working in its zinc and lead or iron mines, instead of on its farms.

"Farm towns." — You see, then, that by no means all of the farms of the central mixed-farming region are like the two described on pages 92–94, and that farming is not the only work of the region. Moreover, many people live not on farms, but in towns and cities. On the map in Figure 120, find the central mixed-farming region. Does the map show many or few towns there? The elms, oaks, maples, and other shade trees along the streets and in the yards of many of these towns give them a very different appearance from those of the "cow country." However, just as the towns of the western region suggest the work on the surrounding ranches, so these towns of the mixed-farming region are "farm towns." Many of the people who live in them have been farmers. In the stores you would find for sale goods which farmers need. For example, in most such towns there is at least one store which sells farm implements. In many of them there are small factories which make the tile that the farmers use in draining wet lands. There are elevators and stock pens to which the farmers bring their grain and stock to

ship, and there are lumber yards where they buy lumber to use for farm buildings. Do you see that the town people depend on the farmers quite as much as the farmers depend on them? Near many of the towns, and especially near the larger cities of the region, some of the farms are dairy farms or truck farms which supply milk and cream or vegetables to the townsmen.

Farmers and ranchmen. — Do you not see, too, that many farmers of the mixed-farming region also depend much on the ranchmen of the grazing and forage-crop region, since from the cow country come many of the cattle to which part of their corn is fed? Moreover, since most of the ranchmen, in their country of slight rainfall, raise little corn and alfalfa on which to fatten their cattle, it is fortunate for them that in the neighboring rainier lands to the east, these crops can be raised, and that the farmers there need cattle from the ranches.

Marketing corn and alfalfa. — Unlike wheat, corn is little used by people for food. Indeed, about three-fourths of the corn raised in the United States is fed to stock. Instead of being hauled to market, then, as most wheat is, most of the corn is stored in cribs and fed to animals right on the farms. Corn spoils easily if stored in a closed bin or barn, and so cribs are built for it with wide cracks between the boards of each side. Many are merely fenced pens, and are not even roofed. Instead of selling their corn in the form of grain, then, many farmers of the mixed-farming region sell it in the form of hogs and cattle. Most of the alfalfa, too, is sold in the form of stock. The corn belt is also the hog belt, and there are more beef cattle in the region than there are in the grasslands of the cow country.

Where corn grows best. — By comparing the rainfall map in Figure 33 with the maps in Figures 100 and 101, you will find that the winter wheat belt is on the drier border of the corn belt. Corn requires more rain than wheat does, and most varieties need a growing season about five months long. Rainfall must be plentiful throughout the growing season if heavy yields of corn are obtained. Young corn also needs warm weather, and thrives best, if other conditions are equally good, in places where the nights as well as the days are hot. In the corn belt, the soil in general is rich and all these needs are met, although some years are better " corn " years than others.

Planning farm work; " following the wheat." — Wheat, unlike corn, must be harvested soon after it is ripe. This means that at harvest time the wheat farmer needs much extra help for a short time, whereas the harvesting of corn may be spread over two months or more. Neighbors cannot give one another enough help at harvest time in the wheat lands, for many farmers need from ten to twenty extra men for about two weeks. Fortunately, however, the farther north a farm is, the later the wheat harvest comes. This makes it possible for laborers from outside the region to begin helping with the harvest in the southern part of the region, and to move gradually northward, doing the same kind of work in place after place. Without such help, much of the wheat could not be harvested.

Corn, winter wheat, and stock. — After traveling through the central mixed-farming region, then, you would think of it chiefly as a " hog, cattle, winter wheat, and corn land."

Check exercise. — 1. Did not the maps in Figures 100, 101, and 103–109 suggest to you that the central mixed-farming region extends east beyond the Mississippi River? Since it does, you should not print this name on your outline map till after you have studied about the eastern states. The lands numbered " 1 " on your outline map, then, are the western part of the central mixed-farming region. Tell why " central mixed-farming region " is a good name for the area.

2. Which of you now can tell the most ways in which men are fitting their work to the kinds of country found in this region?

3. Make a list of the things which the central

mixed-farming region will hereafter suggest to you.

4. State all the reasons you can why men use more land in the corn belt for corn than for wheat, and why they use more in the winter wheat belt for wheat than for corn.

5. Notice that in Figure 115 the men are using binders, instead of headers, to cut the wheat. The binder, as it cuts the wheat, " binds " it into sheaves, or bundles. Men gather these bundles left on the ground by the machine, and stand them in piles, or shocks, such as those in Figure 115. The header is best for use in places where the wheat plants have rather short, stiff stems, and where the harvest season usually is dry. In the corn belt, the binder is used almost wholly. Tell, then, whether this picture was taken in Iowa or in southern Kansas.

6. State all the reasons you can why more people per square mile live in the central mixed-farming region than in the grazing and forage-crop region (Fig. 80).

For your notebook. — 1. Make carefully drawings of Farm A, in Iowa, and of Farm B, in southern Kansas, somewhat like the drawing in Figure 25, that will show how the land in each farm is used.

2. Make in a row twenty little outline drawings of an ear of corn. If you never have seen one, try to find a picture that will help you. These twenty ears of corn in your drawing may stand for all the corn produced in the United States. Print " H's " on eight of these ears. This will show the part of all the corn crop that is fed on farms to hogs. Print " M's " on four other ears. This will show the part that is fed on farms to mules and horses. Print " C's " on three other ears. This will show the part fed on farms to cattle. Print an " S " on another ear. This will show the part fed to stock not on farms. Leave the other drawings white. How many are there of these? They stand for the corn used in all ways not mentioned. Write underneath your drawings two or three sentences telling what they show, and put both drawings and sentences in your notebook.

3. Fill in the blanks in the following sentences and copy the paragraph in your notebook.

" M——, I——, southernmost M——, southeastern S—— D——, eastern N——, central and eastern K——, and north-central and northeastern O—— are in the western part of the central m—— f—— region. Most of this area is gently rolling land with good soils and enough rainfall for many kinds of crops. Among the crops raised there are ——, ——, ——, ——, and ——. In addition, men do much stock raising, stock feeding, and other kinds of farming. It is a land used largely for raising hogs, cattle, winter wheat, and corn."

II and III

Directions for reading. — From the descriptions of Regions II and III, check the ideas which the maps gave you about them and find all the ways you can in which men are fitting work and play to the kinds of country found in these regions.

Find ways in which Regions I, II, and III are alike, and ways in which each one differs from the others.

Views in the northern mixed-farming region. — Can you imagine traveling several hundred miles across lands much like those in Figures 121, 122, and 123? If you were to go eastward by train across North Dakota, or northeastern South Dakota, and on into Minnesota, you might look from your car window hour after hour and find such farm lands almost everywhere within sight. Parts of the eastern Dakotas and western Minnesota have been described as " just one big wheat field." Of course this is just a way of saying that wheat is the most important *single* crop in this region, and that much land there is used for growing it.

Do not the views of these wheat lands remind you in several ways of the nearly level lands in the grazing and forage-crop region? Here, too, are vast open spaces. Fences are few. Only here and there is the far-away sky line broken by buildings or by clumps of trees. In most of the wheat land villages, set well apart along the railroads, grain elevators like those in Figure 121 tower high above the other buildings, and stand out sharply against the sky. In these elevators, grain from the surrounding farms is stored while waiting to be shipped away. Village views in this region, as well as farm views, suggest that much land there is used for growing wheat.

Harvest scenes. — The pictures in Figures 121, 122, and 123 all were taken in August, the month when much of the wheat of the region is harvested. In the picture in Figure 122, notice that the binder is being pulled by a tractor. The shock you see in Figure 123 has not yet been " capped." The farmer is

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Figure 121

Figure 122 *By courtesy of the International Harvester Company*

Figure 123 *By courtesy of the Chicago and Northwestern Railroad*

bending the sheaf he is holding, so that it will have somewhat the shape of a sloping roof. He will lay two bent sheaves on top of the standing ones to form a sort of roof, or "cap." By capping a shock in this way the farmer helps to protect the grain in the event of rain. The wheat in shock in the field in Figure 121 is ready for threshing.

Threshing in this region is done in late summer and early autumn. Threshing crews go with machines from place to place to assist the farmers with this work. Tractors or traction engines pull the threshing machines from farm to farm, and furnish the power which runs them. In many cases, a cook wagon is taken with the threshing outfit, so that the farmers will not have to provide meals for the threshers. Find the threshing machine shown in Figure 124. If traction engines are used instead of tractors, straw in some cases is burned as fuel to run the

Figure 124 *By courtesy of the International Harvester Company*

engines. A single machine may thresh a thousand bushels (thirty or thirty-five wagon loads) of wheat in one day. The straw, which, together with the chaff, is carried out through a large tube-like arm of the machine, is left in stacks in the fields. Such a stack is shown at the right of Figure 124. During the harvesting and threshing season, then, the scenery changes somewhat, and if you were to pass through the region later in the autumn, you would see, not fields of standing grain nor of grain in shocks, but fields covered with stubble or newly plowed, and dotted here and there with straw stacks.

Wheat-land work and weather. — Although many of the wheat fields are plowed in the autumn, wheat is not sowed then as most of it is in the central mixed-farming region. The sowing is done in the spring, instead. Spring wheat commonly is ready for harvest in one hundred to one hundred twenty days after planting. About what time, then, was grain which ripened in August probably sowed?

The winters in this wheat land are cold, even colder than those in the wheat lands of eastern Washington. This is true largely because this Great Plains region is much farther from the ocean than the wheat lands of Washington are. Land cools more quickly than water does. Most of the winter winds which blow from the *ocean* across Washington are warmer than those which blow across North Dakota, South Dakota, and Minnesota from the *land* farther west or northwest. Occasionally, the thermometer in winter registers more than 50° below zero in North Dakota and northwestern Minnesota. In some years plowing is stopped by the freezing of the ground early in November, and the ground may remain frozen from then until April. Frosts severe enough to kill crops sometimes come as late as the last week of May in the northern part of the region, and as early in the autumn as the first week of September. Wheat sowed in the autumn usually is killed by the low winter temperatures. There is least danger of losing the crop if wheat is sowed in spring.

Although the growing season in this northern wheat land is short, many of the days then are hot. Land not only *cools* more quickly than water, but it also *heats* faster. On many summer days in this region, the thermometer registers more than 100° during the warmest part of the day. Although the temperature may drop more than 40° before the next morning, the great amount of heat which the wheat plants receive during the long summer days helps them to grow and ripen rapidly.

Moreover, much of the rainfall in this region comes during the spring and early summer. This is another reason why spring is the best time to plant wheat there. Much of it is planted in April; the rest early in May. The work of raising the wheat, then, is done almost wholly between March and November.

Farming risks. — Just as in the grazing lands, much less rain falls in some years than in others. At times the wheat crop fails because of lack of rain, especially in the western part of the region. Occasionally, on the other hand, rain or hail that falls during hard thunder showers beats down the wheat and injures the crop. A disease called "rust" sometimes damages the wheat badly, especially in years when a wet spring is followed

by much warm, moist weather. In some seasons, too, insects, such as chinch bugs or Hessian flies, destroy part of the crop. Fortunately, the windiest months are in the spring and autumn, when little damage is done to crops.

The farmers, you see, take many chances. One year they may make much money by raising wheat, and the very next year they may make none at all. If spring wheat is the only crop a farmer raises, he may have to go into debt when his crop fails.

Mixed farming. — Many farmers here, partly because of such risks, use a good deal of their land for pasture and for other crops. In such cases, even if the wheat crop fails, the farmers may have something to sell. Flax, barley, rye, hay, and varieties of oats suited to such lands, are grown on many acres of this region. Indeed, more flax is raised here than in any other part of the United States. Although corn commonly does not ripen in this region because of the short growing season, some farmers grow corn and cut it green as food for stock. On many farms here, either beef cattle or dairy cattle are fed.

What does Figure 105 show you about dairy cattle in Minnesota? Good pastures, conditions favorable for growing silage crops, and good railroad connections with city markets where dairy products are in demand have helped to encourage dairying there. Much milk is sold to butter factories by the farmers who own these dairy cattle. The butter factories of Minnesota produce more butter than those of any other state in the Union.

Farmers also have learned that if wheat is raised year after year on the same land, the soil in time does not produce such large crops nor such good wheat as it did earlier. Growing certain other crops on the land from time to time helps to keep it in good condition, so that larger and better crops can be raised. You could see farm work of many kinds going on in this region, then. Though it has long been known as the spring wheat region of the United States, farm practice has been changing, and it now is really a mixed-farming region. Men have learned how to make their farming better fit the conditions in this northern plains country.

A region of mining and lumbering. — If you were to travel in northeastern Minnesota, you would find there, both in the towns and in the country, two important kinds of work very different from those you have seen in the corn country and the spring wheat lands. From the map in Figure 82 find just where Duluth, the chief city of this part of Minnesota, is. You might begin your sightseeing in this region at Duluth.

Part of the city is built on the face of a steep bluff which borders the northern shore of the harbor. From the top of this bluff, you can get a good bird's-eye view of the city and of some of the work which is going on there. Looking southward from the summit, you could see the harbor spread out at the foot of the bluff. To the left, separating the harbor from the lake, is a long, narrow sandbar extending southward toward the Wisconsin shore. Ships pass from the lake to the harbor through a canal which cuts across this sandbar.

Along the water's edge there are grain elevators, coal docks, ore docks, lumber docks, sawmills, and railroad yards. On the southern, or Wisconsin, shore of the harbor, you could see the docks of the city of Superior (Fig. 82). Except during the winter months when the harbor is closed by ice, you might see ships being loaded or unloaded alongside many of the docks. You would find that at the coal docks, big lake boats are *unloaded*. Boats bring coal *into* Duluth, then, instead of taking it *away*. You would find, however, that iron ore is brought to the ore docks by train to be taken by boat *from* Duluth. Perhaps you could watch a loaded vessel as it leaves an ore dock, passes through the

Figure 125 *By courtesy of the Hibbing, Minnesota, Commercial Club*

canal, enters Lake Superior, and in the dim distance disappears at last toward the east. On other vessels in the harbor, you might see lumber or wheat being loaded. Most of the wheat stored in Duluth elevators while waiting to be shipped away comes, as you would expect, from the northern mixed-farming region. On the other hand, the lumber and iron ore on Duluth wharves come from northeastern Minnesota. As the work you see going on in Duluth suggests, the city is in a region of mines and forests.

Open-pit mining. — When you first thought of iron mines in northeastern Minnesota, did you think at once of shaft mines? Many of the mines in Minnesota are "open-pit mines," instead. Part of one of them is shown in Figure 125, but it is difficult to get a good idea of so huge a pit from a picture. The view as you stand on the edge of the pit itself is thrilling. You look far down, over great shelves of reddish-brown earth. These shelves form a giant spiral pathway from the top of the pit to the bottom. You could watch a train of empty ore cars wind round and round this pathway till it is so far beneath you that it looks almost like a toy train. Near the bottom of the huge pit the cars are filled with ore. It is scooped up and lifted into them by great steam shovels. Although one of these shovels is so big that it can pick up several tons of ore at one "bite," it, too, looks small at that distance.

After the cars are filled, the train winds slowly up the spiral roadway out of the pit and starts on its journey to Duluth, some eighty miles away. There the train runs out on one of the trestle-like ore docks, and the ore is dumped from the cars into huge bins. From these bins, it runs down through spouts into the big ore boats. In Figure 126, you can see one of the great ore docks. There are more than one hundred of these large spouts along its side. Some of them have been lowered to the ore boat in the foreground. Ore, then, is taken from the

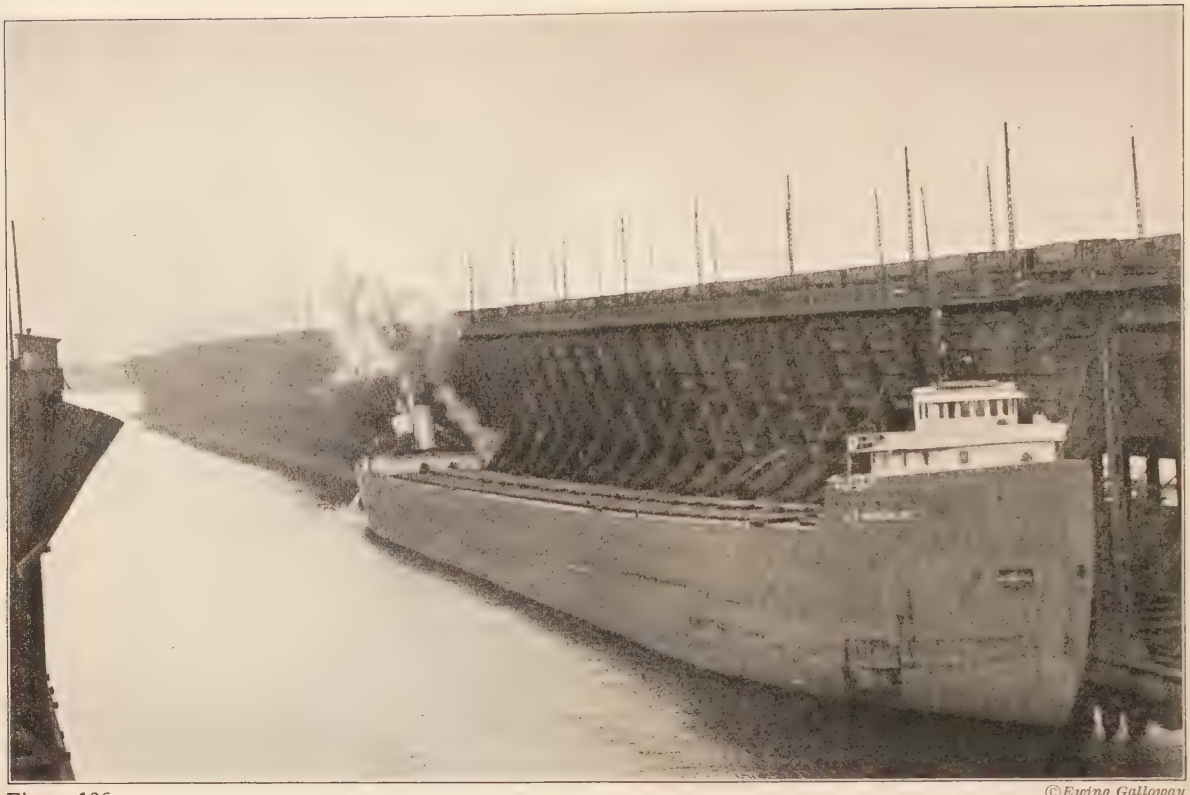


Figure 126 ©Ewing Galloway

ground to the ships without being touched by man. Of course, men manage the machinery by which the ore is handled.

Do you wonder why mines here are open-pit mines, instead of shaft mines? Perhaps you already have thought of a good reason. The iron here is not in veins of hard rock. It is scattered, instead, through great beds of rather soft earth that lie near the surface. To mine it, therefore, men need only to strip off the covering layer of soil or rock, and then scoop out the iron-bearing earth. The pits are simply enormous holes from which much ore has been taken. Near the pits, you can see piles of the earth or rock which was removed in order to reach the ore underneath.

The miners live in towns near the mines. Many of these towns are new. The good pavements, brightly lighted streets, and fine buildings in some of them make them seem more like parts of a large city than like small towns. You can see the edge of one of these towns just back of the ore pit in Figure 125. When the ore beneath these buildings is needed, they will have to be torn down or moved away.

About a third of all the miners of iron ore in the United States, and about a third of all the iron mines in the country, are in northeastern Minnesota. From these mines, there is taken more than half of all the iron ore mined in the United States, and from the harbor of Duluth-Superior more iron ore is shipped than from any other port in the world.

Cut-over and burned-over lands. — Nearly all of northeastern Minnesota once was covered with forests. Now much of its best timber has been cut, and thousands of acres of trees have been destroyed by forest fires. As you travel in this region, you can see from the car window some of the burned-over lands. Acres of blackened stumps stand where once there were large trees. In places where the last fire occurred several years ago, there may be clumps of shrubs or young trees among the stumps. There also

Figure 127 *By courtesy of the United States Forest Service*

are many stump lands in this region like those in Figure 127. From them the trees have been, not burned, but cut. Here and there in the cut-over and burned-over lands, there are farms. On many of these farms, stumps still stand in the midst of fields of oats, potatoes, or hay. Here and there you may see cattle grazing, too, among the stumps. Many of the small farm houses are built of logs. Although much timber has been taken from this region, there still are thousands of acres of fine forests there, and in these forests many men work.

Lumber trees. — On the map in Figure 128, compare the kinds of forests in this region with the kind in the West. Although in many places hardwoods are mixed with the conifers, some of the Minnesota forests are called "pineries," because so many of the trees in them are white pines, from which excellent softwood lumber can be made.

Logging camps. — While at work in the forest, most of the loggers live in camps. Do you see why it would be unwise for them to build regular villages in which to live near their work? All the timber to be cut in one place might be felled in a single season, and the next year their work would be in another place. However, these camps are not camps of tents. The men need snug buildings in which to live, for the winters in this region are cold. In a camp near a railroad, you might find buildings made of lumber. The lumber for these camps is brought in by train. When the logging near a railroad camp has been finished, the buildings can be taken apart and the lumber sent by train to a new camping place. In a camp near a river, but not near a railroad, you probably would find that both the houses for the men and the shelters for the animals were built of logs. Logs from the near-by forest are the most conven-

After Zon and Sparhawk, by courtesy of the McGraw-Hill Book Co.

Figure 128. Forest regions

ient building material in camps to which it is hard to ship lumber. In Figure 129 you can see one of these log camps. At the left there are barns for the work horses, and near one of them a stack of hay. Notice the fuel wood in front of the right-hand building. Much heat is needed during the severe winter weather.

Methods of logging. — Some of the logging work near the rivers differs from that near the railroads. If logs are cut in places near railroads, they can be sent to the sawmills by train. Although at times trains cannot be run between the camps and the mills because of floods, very deep snow, or for some other reason, they do run at most times. Near the railroad camps, then, at almost any time of the year, you might see logs being loaded on trains to be taken to the sawmills. If the logs are cut in places near rivers instead of near railroads, the logs may be floated to the sawmills. Much of the time during the winter the streams in this region are frozen. The logs which are hauled to the streams during the winter are piled up on the banks. In the spring, when the ice and snow melt and the swollen streams run swiftly, the logs are rolled into the water and float downstream. In many cases, the logs to be floated are fastened together to form rafts. The work of getting the logs from the river banks to the sawmills downstream is called " driving " them. It is dangerous work. Perhaps you have read stories about the daring deeds of men who have taken part in the great " spring drives." When there were great numbers of trees to be cut close to the rivers, railroads were few, and nearly all of the logs in this region were " driven " to the mills. Gradually much of the land near the rivers was cut over, and men had to haul logs to them from farther and farther away. Now many railroads have been built into these forested lands, and most of the logs are shipped out by train.

Both in the river camps and in the railroad camps, the work of logging is somewhat different here from logging in Washington, Oregon, and California. This is partly because even the large white-pine logs are smaller than the giant logs cut from firs, cedars, and redwoods in the Northwest. Big logs or " chains of logs " are dragged, or " snaked," along the ground by horses, oxen, or a tractor.

In the winter time, large sleds sometimes are used to haul the logs from the loading place to the railroad or to the river on which they are to be sent to the sawmill. These large sleds cannot be used successfully unless the snow is eight or ten inches deep. In most years, it is not deep enough for sled hauling to begin before the middle of December. Later in the season, snow plows sometimes need to be used to clear part of the snow from the logging roads. On the other hand, sled hauling may be stopped now and then by spells of mild weather when much of the snow melts. Near some camps, you might see a tractor pulling several sled loads of logs at

Figure 129

By courtesy of the United States Forest Service

one time to the railroad or to the river. For the most part, horses do the pulling. The sled-hauling season lasts till much of the snow is melted in the spring.

Sawmill towns. — Of course only part of the timber cut in northeastern Minnesota is sent to the sawmills in Duluth. There are sawmills in many other towns of the region, too. On the map in Figure 82, find the railroad which runs northwest from Duluth and follows along the upper Mississippi River for about a third of the way across the state. This railroad passes through many of the more important sawmill towns. Most of those along this route are on the banks of the Mississippi or on the banks of the river which flows into Lake Superior at Duluth. From what you now know about the region you can see several of the reasons why men have chosen these places for sawmills. They are not far from the parts of the forest north of them where most of the logs are now being cut. They are on the main line of a railroad on which lumber made in the mills can be shipped. Supplies which are needed in these towns can be sent in by rail from other places. In or near some of the sawmill towns there are waterfalls which furnish part of the power for the mills.

Probably before many years, so much of the timber of this region will be "mined" that there will be few sawmills there instead of many (p. 70). Already there are fewer than in earlier years. In 1920, the sawmills in Minnesota numbered about 300 less than in 1910. In the days when much timber came from the southern part of this region, and when most of the logs were "driven," there were many sawmills in the Mississippi River towns of the southeastern part of the state. As the work of logging shifted to new districts, logs used in the southern mills had to be brought to them from farther and farther away, and in time new mills were built

in the more northern towns. Now the mills in the towns of the southeastern part of the state are few.

State and national forests. — Much forest "mining" has been done in northeastern Minnesota, but some forest "farming" also is being done there. Some forest lands have been set aside as state and national forests (Fig. 63). These are being taken care of in much the same way as the national forests in the West (p. 70). Some of them are used also as parks. In the forest region there are many beautiful lakes and streams. Along their shores there are delightful places for camps and summer homes. If you visited the region in the summer time, then, you might see people at play as well as at work in the forests of this region.

Check exercise. — 1. The region of mining and lumbering, like the central mixed-farming region, extends into states east of the Mississippi. This name, then, you should not print on your maps now. The northern mixed-farming region, on the other hand, lies wholly to the west of the Mississippi, and so you should now print this name on your outline map. Place the name so that some part of it will touch each of the parts of the states in which you put the "2's" on your map.

2. Make lists of the things which each of these regions now suggests to you.

3. Name all the ways you can in which work and play in these regions fit the kinds of country in them.

4. Tell why men grow spring wheat instead of winter wheat in the northern mixed-farming region.

5. Make a list of the advantages of having a logging camp near a river on which logs can be sent to the mill by water. Name disadvantages of river logging. Name advantages and disadvantages of logging near a railroad.

For your notebook. — 1. Suppose you were to start early in the summer with a wheat-harvesting crew in southern Oklahoma, and were to work gradually toward the northern boundary of the United States. Make for your notebook a list of the states in which you would work. Arrange them in the order in which you would work in them.

2. Make drawings for your notebook of five wagons in a row. Suppose they are all full of wheat. These five wagon loads will stand for all the wheat raised in the United States. Color three of the wagons red. These stand for the part of the wheat that is shipped away from the locality where it is raised. The rest is used near home; some of it is used for food, some for seed, and some for feeding stock. Which is greater, the amount of wheat used on the farms or the amount sent away? Do you see any reasons why this is true? If so, what ones? Compare wheat and corn in this respect.

3. Fill the blanks in the following sentences, and copy the paragraphs in your notebook.

"Northeastern S—— D——, central and northwestern M——, and most of N—— D—— are in the northern mixed-farming region. Because of cold ——, wheat sowed in the autumn is in danger of being winterkilled, and so wheat and the other crops grown here are planted in the ——. Although much spring wheat is grown, the region has become a land of mixed farming.

"Northeastern M—— is the western part of a region of —— mines, and of forests in which much —— is done. In many of its towns there are sawmills. It is a land, moreover, of *thousands* of lakes which help to make the region a good vacation 'playground.' It is not without farms, but mining and lumbering are more important there now than farming and stock raising."

Suggestions for extra work. — You might try to show in a sand pan an open-pit mine.

Write a short description of a scene in Region I, II, or III. Do not use any names of places that would help others tell which region you chose. Then read your description to the other pupils, and see how many of them can tell in which region the scene you described could be found.

IV and V

From Lake Superior to the Gulf of Mexico. — If you were to leave Duluth on the evening of October 1, and go by train to southern Louisiana, you could reach New Orleans (Fig. 82) on the evening of October 3. About how long, then, would it take you to go from the Minnesota mining and lumbering region to lands near the mouth of the Mississippi? When you left Duluth, the "open" season on the northern Great Lakes would be largely over. Some weeks later the harbor at Duluth would be closed by ice, and then for about five months ore boats could not make their journeys to and from the city. You would arrive in a land where there is no

Figure 130 *By courtesy of the New Orleans Association of Commerce*

"closed" season. If you were planning to remain all winter on the Gulf Coast, you would need to prepare for some chilly, even frosty weather. It is, however, a land of almost no snow and ice — a pleasant land in which to spend the winter. West of New Orleans, along the coasts of Louisiana and easternmost Texas, lies the *coastal mixed-farming region*. Had you already thought of this name for Region IV?

Directions for reading. — As you read the following descriptions of work in the coastal mixed-farming region and in the *southern mixed-farming region* add all you can to the "picture" which the maps gave you of these regions. Find ways in which these regions are like each other. Find ways in which they are unlike. Compare each of them with each of Regions I, II, and III, finding all the likenesses and differences you can. See what reasons you can find or think of for these likenesses and differences. Write a list of ways in which men make their work fit the kinds of country found in these southern regions.

Delta lands and coastal prairies. — If you were to go west from New Orleans into the coastal mixed-farming region, you first would cross delta land made by the material which the Mississippi River has carried and dropped there. You see some of this land in Figure 130. The picture suggests that this delta land is like that of the Nile in at least two ways. What are they?

West of the delta lands you come to the coastal prairies. As the name "prairie" suggests, most of this land is grassy and nearly level. It also is low, most of it only a few feet above the level of the Gulf of Mexico. Much of it is marshy, and so cannot be cultivated until the standing water has been drained from it. As you can see on the map in Figure 29 (p. 33), some timber is scattered through the region. As in the prairie lands of the central mixed-farming region, strips of timber extend along many of the streams. As you probably would expect, you could see cattle, horses, mules, hogs, and sheep pasturing in some of the grasslands and woodlands.

As you traveled through the region, you would see that there is more land which is not farmed than there is in most parts of the central mixed-farming region. This is largely because of the many acres of wet land. In the delta and the coastal prairie, however, there are thousands of good farms and plantations, as the larger farms are called.

Raising sugar cane. — In the delta land near New Orleans, you would see many dairy, fruit, and vegetable farms which in part supply the city people with food. You also would see many acres of corn, as well as fields like that in Figure 130, in which sugar cane is growing.

In early October, the cane harvest would be just beginning, and in some fields you might see negroes at work cutting the cane, as in Figure 131. Notice in the lower right-hand part of this picture the pile of stalks stripped of their leaves. If you were to suck a piece of cane stalk, you would find the juice sweet. It is for the stalks that sugar cane is grown. The greater the amount of sugar in the stalks, the better the sugar cane. From an acre of good cane, some thirty to thirty-five tons of

© Kadel and Herbert

Figure 131

stalks can be cut, and a ton of good stalks yields about one hundred sixty-five pounds of sugar and five gallons of molasses.

The cutters in Figure 131 are stripping the leaves from the stalks, and "topping" the stalks as they cut them. If they were cutting late in the autumn, and there was danger of frost, they probably would pile the plants on the ground in "windrows" without stripping off the leaves. The leaves would then help to protect the stalks from the cold till they could be hauled to the mill, where they would be crushed to obtain sugar and molasses. Soon after the picture in Figure 131 was taken, the stalks in that field were loaded into a wagon and hauled to such a mill. The work of harvesting sugar cane goes on from early October until about the first of January. Is the harvest, then, more like that of wheat or of corn?

Most of the sugar cane of the coastal mixed-farming region is grown not from seed, but from pieces of stalk which are planted. Just as farmers gather some grain for seed, so sugar planters select carefully some of their better stalks to plant. They do not have to plant cane each year, however, for the stubble left in the field will sprout and produce a new crop. Some growers, however, *do* plant each year, because they think they get better crops in that way. Others grow two or three crops on a field from one planting. It requires about three tons of stalks to plant one acre of ground. Planting may be done in the autumn, winter, or early spring. At whichever of these times cane is planted, the plants begin to grow in the spring. Cane fields need to be cultivated, as corn fields are, to destroy weeds. The cultivating season begins as soon as the cane is well up, and lasts till about the first of July.

In order to mature, sugar cane needs at least eight months free from frost. If, however, it is left standing longer, the amount of sugar in the stalks increases. Some planters accordingly leave all their cane, except that cut for planting, standing in the fields until the Weather Bureau sends out a warning that temperatures below freezing are expected. Then they cut and windrow the rest of the crop as quickly as possible. Even if cane is frozen while standing, windrowing usually saves the crop, for the covered stalks thaw out slowly and so do not spoil.

What do the maps in Figures 33 (p. 36) and 95 (p. 85) show you about the Mississippi delta lands? Cane needs not only a long growing season, but also much hot weather, and much rain. On the rich soils of the

Figure 132 *By courtesy of the Santa Fé Railroad Company*

Figure 133 *By courtesy of the Southern Pacific Lines*

Mississippi delta, then, where all these needs are met, planters can grow sugar cane successfully.

Rice farming. — Some rice is grown in the delta lands, but most of it is raised in the coastal prairies of western Louisiana and eastern Texas. In early October you would find much of the prairie-land rice in shock, as in Figure 132. Does not this picture remind you of a northern wheat field at harvest time? Notice that the binders shown in the picture are drawn by mules. They stand the southern climate better than horses do, and so are used very commonly for work on southern farms and plantations. The rice plant should be cut before it is entirely ripe in order to prevent the grains from shattering, and should then stand about two weeks in the shock in order to let all the kernels harden and to let the straw dry thoroughly. Later, the rice is threshed much as wheat is. If rains come when it is in shock, it must sometimes be left in shock longer. The threshed rice is taken in big sacks to mills where the brown husks are removed from the kernels and the rice is "polished." You would see many rice mills, then, as well as sugar mills, in this farming region.

Rice is somewhat harder to raise than wheat because it is a water-loving plant and needs to grow part of the time in standing water. The standing water which helps the rice to grow fortunately kills some of the weeds which would flourish if the fields were not flooded. However, the rice fields must be dry at harvest time. In order to keep water standing on the fields at the proper time, they must be irrigated. Later, in order to make them dry for harvest, they must be drained. Most of the sowing is done in April

Figure 134 © Ewing Galloway

and May. When the plants are six to eight inches high, water from ditches such as the one shown in the lower left-hand part of Figure 133 is turned on to the fields to a depth of one or two inches. For about three months, water is kept on the fields. More and more is turned in, till by the time the plants are about two feet high, the water is from six to twelve inches deep. In order to hold the water on the land, each field is divided into lots called "cuts." Each cut must be almost level, but also must slope enough so that water will flow across it. The size of the cuts varies with the slope of the land. The cuts are separated from one another by broad, low dikes, or levees. These are about ten feet wide at the bottom and are just high enough to hold water on the field to the proper depth. They are made with gently sloping sides, so that binders and other machines can be driven over them easily and without harming them. In many cases, rice is grown on the surface of the levees, so that land between the cuts will not be wasted. Just as men carefully look after fences in the "cow country," so in the rice lands men guard the dikes to prevent burrowing animals or crayfish from harming them. Of what other country does this care of the dikes remind you? (*Journeys in Distant Lands*, p. 105.)

Here and there in the rice lands you would see pumping stations, where water is lifted from the streams and from wells into canals through which it flows to the rice fields.

Crop rotation. — Rice planters need to rotate crops not only to lessen harm done by weeds, but also for the purpose of keeping their soils in better condition. The practice of some planters is to use a field six years for rice, the following six years for various unflooded crops, the next six years for rice again, and so on. Among the more important crops which are grown in rotation with rice or sugar

Figure 135 *By courtesy of the United States Department of Agriculture*

cane are corn, sorghum, cow peas, peanuts, beans, potatoes, and *winter* oats. Occasionally, too, the fields are used for pastures. In some cases, two and even three crops are grown on the same land in a single year. How does the map in Figure 95 help you to explain how this is possible? From what you have learned about oats, can you give a reason why winter oats, instead of spring oats, are grown in the coastal mixed-farming region? (P. 50.)

The coastal region, then, is one of *mixed* farming. Will it not, however, *first* suggest to you almost flat fields of sugar cane and rice?

Cotton land views. — If, after your October travels in the sugar and rice lands, you were to go in November through the part of the southern mixed-farming region which lies west of the Mississippi River, you would see many fields like that in Figure 134. This picture was taken on an Arkansas cotton plantation. Notice that, just as on the sugar plantations, the crop is being harvested by hand, not by machinery. This crop differs from most of the others you have read about in that it is grown chiefly for clothing, instead of for food.

Into bags which hang from their shoulders, the pickers put the white balls, or "bolls," of cotton as they pick them. As soon as a sack is filled, it is emptied, of course, and, at the end of the day, the cotton which each picker has gathered is weighed. In a day, a grown person picks from one hundred fifty pounds to three hundred pounds or more.

If you were to examine a boll of cotton as it comes from the plant, you would find hidden among the fibers many seeds, to which the fibers are so firmly fastened that it is difficult to separate them. These seeds make up about two-thirds of the weight of the cotton as it is picked. The machine used for separating the seed from the fiber is called a gin. The seed cotton may be stored on the plantation for a time, or it may be hauled at once to the nearest ginning plant, where the seed is separated from the fiber, or "lint." Figure 135 is the picture of a cotton-ginning plant in Texas. Notice the wagons in which seed cotton has been hauled there. From a wagon load of seed cotton the planter gets about half a ton of seeds and five hundred pounds of lint. This lint is pressed into a package, or bale, about fifty-four by twenty-seven by forty-five inches in size. Each bale is covered on two sides and on the ends with bagging, and is bound with iron bands.

In some cases, almost a bale of lint is produced on an acre, but in most fields an acre

produces only a fifth to a half of a bale.

Uses of cotton seed. — Although cotton is raised chiefly for the fiber, valuable by-products are obtained from the seed. The more important of these are the oil which is pressed from it, and the " cake " which is left after the pressing. The oil is used in cooking, and for salads. Like olive oil, it also is used in making soap. Mixed with other oils, it is burned in the lights which some miners wear on their caps. The " cake," or meal, is excellent food for stock, especially cattle, as are also the hulls of the seed. Moreover, both are good fertilizers.

The work of raising cotton. — In the late winter and early spring, cotton fields are plowed and made ready for planting. In the southern part of the region, planting begins in March; in the northern part, in late April. When the plants begin to grow, they thrive best if the weather is mild, and if *light* showers fall frequently. They may be injured at this time either by cold, rainy weather, or by hot, dry weather. When the cotton is a few inches tall, the rows are thinned, leaving the plants from one to two feet apart. This work, which is done by hand with hoes, is called " chopping out " the cotton. In some parts of the region, the cotton fields are hoed again after the cotton is chopped out. In others, no more hoe work is done. Like corn, cotton is cultivated several times.

In June and July, the plants begin to bloom. A cotton field in bloom is beautiful. The plants with their dark-green foliage form a lovely background for the big blossoms, two or three inches across. The blossoms at first are white, and later turn pink. When the plants are in bloom, they need much water, but also much sunshine, as well as warm days and warm nights. At this season, then, the planters hope for occasional, rather heavy thunder showers with several days of bright, warm weather between them. The bolls which later take the place of the flowers are the " fruit " of the cotton plants. They begin to open late in the summer, and flowering and fruiting go on together until stopped by frost. Fields are commonly " picked over " three or four times during the season. After picking begins, much rainy weather is undesirable. Some rain helps to produce late crops of blossoms and bolls, but much rain damages the fiber. Picking often goes on till Christmas time, and sometimes even later. Fortunately, in most parts of the region October and November are the driest months of the year. On most plantations, the late winter months are the least busy ones.

Cotton can be raised successfully only where the growing season is at least six months long, where rain is plentiful and comes chiefly at the times when it is most needed, and where many helpers can be found to assist with the hand work which the crop requires.

Cotton farms and plantations. — In Oklahoma and in the western part of the Texas mixed-farming lands, cotton is raised on *farms*. In Arkansas, Louisiana, and eastern-most Texas, much of it is raised on *plantations*, which are, in most cases, not only larger than the cotton farms but also are managed differently.

Mr. Miller, for example, has a Texas *farm* of one hundred sixty acres. In a recent year he planted one hundred seventeen acres in cotton, sixteen in corn, three in oats, and three in sorghum. He and his three sons, with the help of their mules and machinery, did all of the farm work except picking the cotton. During September and part of October, they hired four negroes to help with that. Except for the difference in crops, his farm is much like those in the central mixed-farming region.

Mr. Thompson has a cotton *plantation* in Louisiana, in which there are nine hundred sixty acres. He does not live on the plantation, but in a near-by town. He rents part of his land to twelve negro " croppers," who work under his supervision. To each he furnishes tools, a mule and its feed, seed, and part of the fertilizer needed. In return, he receives half the cotton grown. The cropper receives the

Figure 136 *By courtesy of the United States Forest Service*

other half for his labor. Each cropper rents about twenty-five acres. With one mule, a man cannot commonly plow, chop, hoe, and cultivate more land than this, and the cotton grown on it is about all a single family can ordinarily pick in a season. Sometimes such parts of a plantation are called "one-mule farms." In addition to the croppers, Mr. Thompson hires several men whom he pays in cash to help him with the remainder of his plantation. He also furnishes them with houses. From the wooded part of the plantation, they cut wood for fuel; they tend the stock pastured on some of the uncultivated lands; and they grow feed crops for the work animals and other stock.

The boll weevil and mixed farming. — The cotton growers of the South lose each year millions of dollars because of the damage done to their cotton by the boll weevil and other insects. The weevils bore into the flower buds or young bolls of cotton and lay eggs in them. The grubs which develop from the eggs make the flower buds drop off or ruin the fiber in the bolls. The pink bollworm is another of the dreaded pests, against which some Texas cotton growers have had to fight. Many experiments have been made to find ways of preventing damage from these insects.

In one way, however, these pests have proved helpful to the cotton growers. From fear of losing much of their cotton crop, many farmers planted less cotton and raised more crops of other kinds and more stock. This was much better for their land, and for later cotton crops, than raising cotton year after year on the same fields would have been. On one two-hundred acre farm, for example, the farmer planted in a recent year thirty acres of cotton, forty acres of corn with cow peas between the rows, fifteen acres of oats, and fifteen acres of peanuts, beans, and sorghum. The rest of his farm was largely in pasture and woodland. In addition, he raised some mules, cattle, hogs, and chickens. At the western edge of the Texas cotton lands, farmers use wheat and Kafir corn in their crop rotations. Many farmers of this region are keeping more stock than formerly, partly because they have learned that meal made from cotton seed is good stock food.

Notice again the maps in Figures 97 (p. 85) and 110 (p. 90). You see that at some places in the southern mixed-farming region sugar cane and rice also are raised. Find the district in Arkansas where much land is used for growing rice.

Although the southern farming region, then, has long been known as the "cotton belt," it, like the other farming regions between the Rocky Mountains and the Mississippi, is a land of *mixed* farming.

Farm woodlands. — On most southern farms and plantations, part of the land is still in timber. If a farmer manages his woodland wisely, he can, in most cases, cut timber occasionally in addition to his other crops. If, on the other hand, he lets stock in to graze on the seedlings, or burns the ground over each year, as some farmers do, his woodland will in time be ruined. In cutting trees on the Texas woodland shown in Figure 136, much wood has been wasted by leaving stumps nearly three feet high. Woodland work can be done during the winter season, when other farm work is light.

Logging and lumbering. — There also are many forests in the South which are not on farms, and many people there make their living wholly by logging and lumbering. Next after Washington and Oregon, Louisi-

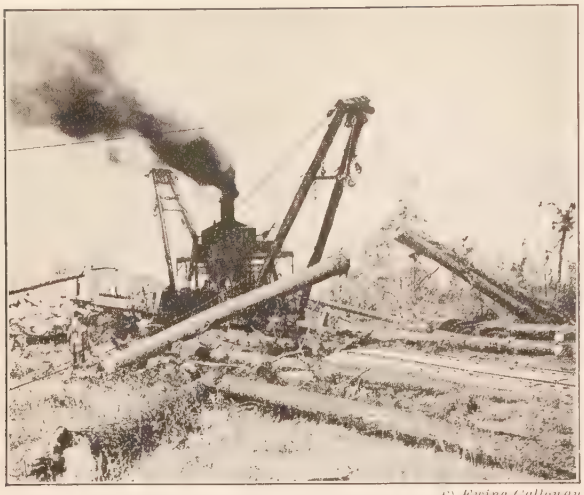


Figure 137 © Ewing Galloway

ana has in recent years produced more lumber than any other state in the Union. By far the greatest part of it is yellow pine. Arkansas and Texas are both among the leading ten states in the production of lumber.

In Figure 137 you can see a skidding machine at work near the edge of a yellow pine forest. A railroad has been built into the forest there. Near the railroad, men have felled the large trees and trimmed them. They used mules or oxen to drag the cables from the skidder to places where the logs could be fastened to them. As the cables are wound up, the big logs are dragged toward the machine. The skidder in Figure 137 is pulling in several big logs at once. These will be piled alongside the track, and later they will be loaded on cars to be shipped away. From twenty-five to forty acres of land can be logged over from a single spot. Then the skidder is moved, and work is begun at a new place. Where such skidders are not used, the logs are hauled to the loading place on high-wheeled carts or wagons, some of which have eight wheels. How does logging here differ from that in Minnesota? What reasons can you give for the differences?

Logging camps in the South do not need to be warmly built. Some of them consist of small portable houses, which can be

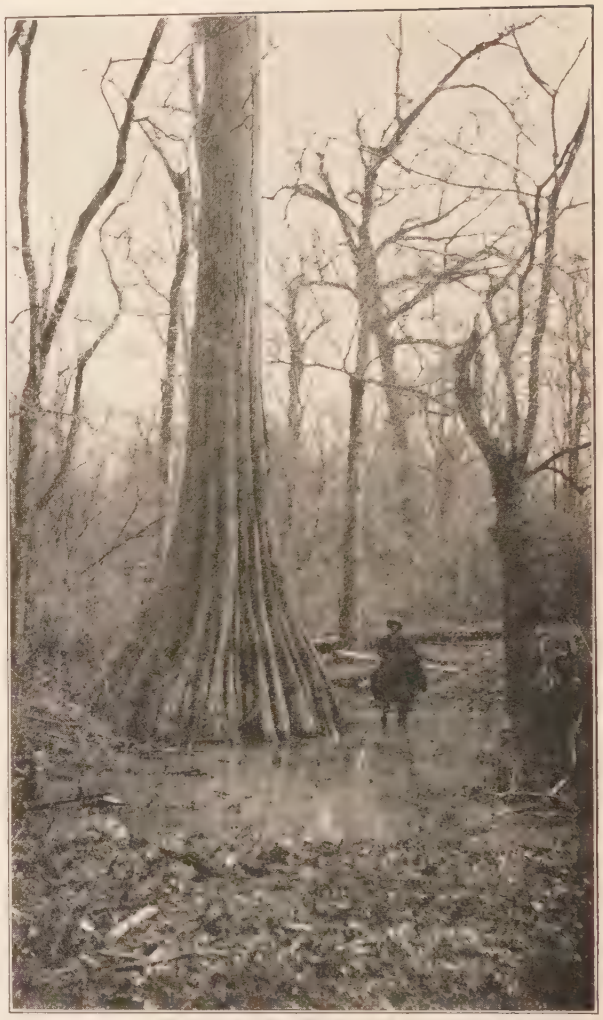


Figure 138 By courtesy of the United States Department of Agriculture

quickly set up and taken apart time after time.

In some of the swampy places, where cypress trees grow, you might see the skidding machinery on flat boats, or "pull-boats," moored to the bank of a lake or stream. Where railroad skidders are used in swamp lands, the tracks in many cases must be built on trestles or piling. At times of low water, the cypress trees are "deadened," and several weeks later they are felled. The picture in Figure 138 was taken at a time of low water. The largest tree is a cypress. Lanes are cut, along which the logs can be guided through the forest to the stream. When the water in the swamp is five or six feet deep, negroes go in with canoes and pole the logs to places

Figure 139 © Ewing Galloway

where they are fastened to the cables of the pull-boat. After the logs are brought together near the pull-boat, they are bound into rafts and towed to the sawmills. The streams are so sluggish in these almost flat lands that the logs will not float by themselves to the mills. In places where the pull-boat is not used, and there is no railroad, the logs are poled all the way to the places where they are made into rafts.

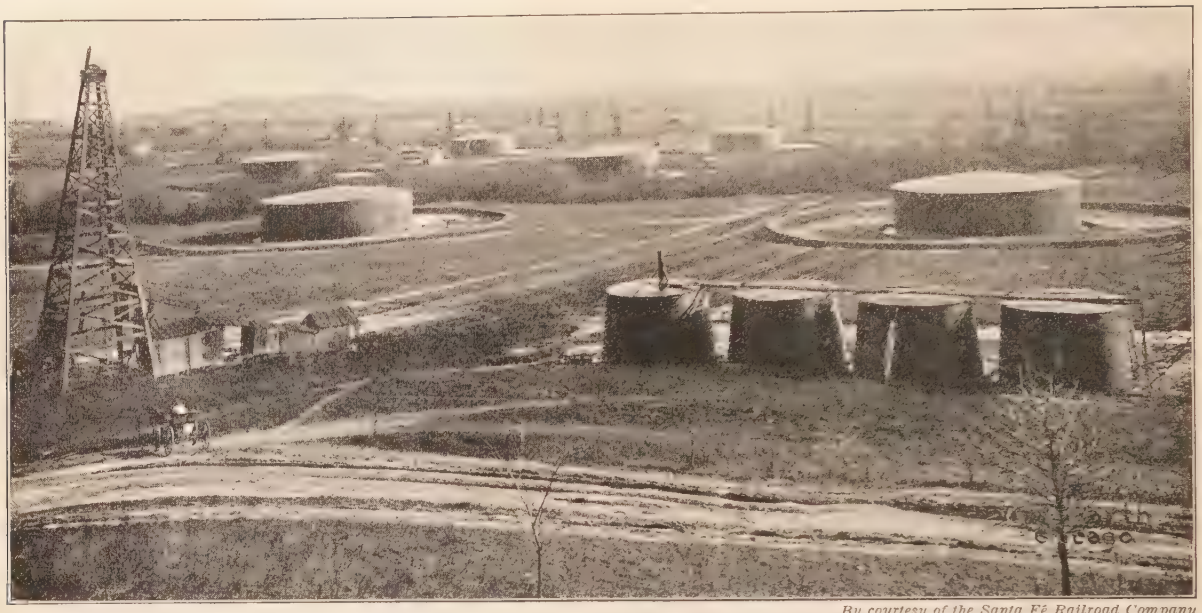
Some of the camps near the pull-boats are built on flatboats. Many of the houses are two stories high, with the kitchen and dining room on the first story, and sleeping rooms for the men upstairs. They "paddle" to and from their work in dugout canoes.

Both in yellow pine and cypress camps, work can go on the year round. Do you see why?

Producing petroleum. — Find again on the map in Figure 43 the oil fields in Oklahoma, Arkansas, Texas, and Louisiana. The landscape of an oil field which has producing wells is in striking contrast to all other landscapes because of its many tall derricks (Fig. 139). In what state in the West did you see similar landscapes (Fig. 41)? In what states in the central mixed-farming region did you find petroleum produced? Under each oil derrick there is an oil well. Close to the derricks are small buildings, such as that shown in Figure 139. In them are the engines or motors and part of the other machinery needed to help in drilling wells, and perhaps later in pumping the petroleum, if petroleum is found. A well usually is drilled by means of a string of tools, some fifty feet in length and weighing half a ton or more, fastened to the end of a cable which is suspended from the top of the derrick. The heavy steel tools, falling again and again, slowly punch a hole into the earth to the depth where men expect to find petroleum. Perhaps no petroleum is found, in which event all the money spent in drilling is wasted. Perhaps when the oil-bearing rocks are reached, petroleum may spurt forth in a mighty stream. Again, the petroleum may flow out less violently, or from the outset it may have to be pumped out. In any case, the output of an oil well in time becomes less, and at length ceases. The "life" of a well varies from a few months to twenty years or more.

In the oil fields you also would see "tank farms" like that shown in Figure 140. In these great round steel tanks, petroleum is stored until it is needed. Notice that each of the larger tanks in the picture is set in the center of a round hollow, surrounded by a low ridge. The hollow is large enough to contain the entire contents of a full tank. If the tank should leak, then, much of the oil would be saved.

Transporting petroleum. — While some petroleum is carried from these oil fields by motor trucks and in railroad tank cars, most of it flows through oil pipe lines, for they provide by far the cheapest transportation. Find in Figure 43 the principal pipe lines which serve the fields of Kansas, Oklahoma, Texas, Arkansas, and Louisiana. Where do



By courtesy of the Santa Fé Railroad Company

Figure 140

they extend to? Some of the petroleum from the Oklahoma and Texas wells is transported by pipe lines to the vicinity of New York harbor, a distance of more than 1500 miles. The iron pipes through which the petroleum flows are six to ten inches in width, and commonly are placed two or three feet underground. In many cases, they are covered by something, such as asphalt, which will keep the iron from rusting in the moist ground. The pipe lines extend directly across country, running up hill and down along the shortest usable routes to refining centers, or to shipping points on the coast. Here and there along the pipe lines, at distances of some fifteen to thirty miles from one another, are pumping stations, where powerful pumps force the petroleum forward.

Refining petroleum; distributing its products. — The larger refineries are near big cities where petroleum products are in great demand, or at points near seaports from which the products can be sent to distant lands in ships called "tankers." They are manufacturing plants in which gasoline, kerosene, fuel oil, and lubricating oil can be obtained from the crude petroleum, and where, in some cases, several hundred other substances which are useful to man can be obtained in smaller amounts. You could easily recognize a refining plant by its many steel storage tanks, similar to those built in the oil fields (Fig. 140), and looking somewhat like huge round cheese boxes. For the most part, railroad tank cars take the bulkier refinery products to depots whose storage tanks supply the tank trucks and tank wagons that serve stores, gasoline filling stations, and the like.

Oil towns. — If a well yielding much petroleum has been drilled in a new district, other wells are certain to be drilled close at hand as soon as possible, for many men will want to secure for themselves as much petroleum as they can from the underground supply. If the earlier wells continue to produce much petroleum, large numbers of men will come in from other parts of the country looking for chances to make money. Much work is to be done in such a new field. Roads must be built on which needed materials of many kinds can be hauled in. Power must be provided, as well as the means for getting and distributing water. Storage tanks for the petroleum must be built as soon as possible, and meanwhile new wells are dug in

Figure 141 © International Newsreel Corporation

feverish haste. Machine shops, stores, houses for the gathering people, and many other buildings spring up quickly, and the result may be a bustling town where a few weeks or months before there was only open farm or ranch land. Figure 141 is an airplane view of part of such a new oil town in Oklahoma. Its dirt streets, dusty or muddy according to the weather, its wooden buildings, most of them with a single story and many as yet unpainted, and its lack of trees and of various other improvements, tell the story of its mushroom growth. Such towns are of necessity short lived (p. 69), unless other lines of work are developed upon which they can depend as the oil gives out.

Check exercise. — 1. Print now on your outline map of the United States the name "coastal mixed-farming region." Use abbreviations, if necessary. Refer carefully to the maps in Figures 97 and 110 in placing this name.

2. Since, as you have read, and as the map in Figure 111 suggests, the southern mixed-farming region extends *east* of the Mississippi, this name should not be printed on your map till after you have studied the southeastern states.

3. Close your eyes and try to picture the things you would see on a trip through the coastal mixed-farming region. Then make a list of the things you "saw." Which of you made the longest list? Which of you can make in this way the longest list of things you would see on a trip through the part of the southern mixed-farming region which is west of the Mississippi?

4. Compare the ways you found in which these two regions are like each other (p. 109). Compare the ways you found in which they differ. What reasons can you give for these likenesses and differences?

5. Tell all the ways you found in which men in the coastal and southern mixed-farming regions

make their work fit the kind of country in which they live. "Men sometimes build floating logging camps where logging is to be done in swamps" might, for example, head your list.

6. How do you think the work of the ranchmen of the grazing and forage-crop region probably helps some of the farmers in the southern and coastal mixed-farming regions? Page 98 will help you in answering this question.

7. Make a list of questions about these southern regions that you think would test your class on the materials on pages 109–119. Then try to answer one another's questions.

For your notebook. — 1. Make a drawing of a wagon like those in Figure 135. On the side of the wagon, print "Seed cotton, 1500 lbs." Make *in a row*, underneath your drawing of the wagon, drawings of (1) a bale of cotton, (2) a boxlike bin, (3) another bin, and (4) a round tank. Print on one side of the bale "Lint, 500 lbs."; on the side of the first bin "Hulls, 400 lbs."; on the side of the second bin "Cake, 375 lbs."; and on the side of the tank "Oil, 150 lbs." Draw a line from the wagon to each of the drawings beneath it. Write under your drawings a sentence or two explaining that, from the wagon load of seed cotton for which the first drawing stands, there commonly can be obtained the amounts of hulls, cake, oil, and lint which the other drawings stand for.

2. Fill in the blanks in the following sentences, and copy the paragraph in your notebook: "Farmers in the coastal mixed-farming region use much of their land for r—— and s—— c——. Both these crops need abundant moisture. During most of its growing period, —— is kept in standing water, but r—— lands should be dry at harvest time. The crop is well suited to low, almost flat lands which can be irrigated. S—— c—— needs a growing season of about eight months. Farmers in the southern mixed-farming region use much of their land for c——. C——, too, needs a longer growing season than corn, much rainfall, heat, and sunshine while it is growing, and a fairly dry picking season. Although corn can be grown throughout the southern regions, sugar cane and cotton cannot be grown throughout the corn country. Moreover, in the southern regions there are many negroes to help with the great amount of hand labor which these crops require."

Suggestions for extra work. — If there is a lumber yard near your home, try to find how the amount of lumber received there from Arkansas and Louisiana compares with that received from Minnesota, Washington, and Oregon.

Some Cities of the Western Interior

Things to do. — 1. Find on the map in Figure 120 (p. 97), the part of the United States between the Rocky Mountains and the Mississippi. Are there more towns and cities in the eastern part, or in the western part, of this section of the United States? What have you learned about this section which helps you to explain this?

2. Make a list of the cities of the Western Interior in which there are more than 100,000 people (Fig. 82). Which of them is largest? Which state contains the greatest number of these cities?

3. Notice on the map in Figure 82 the main railroads that enter each of these larger cities.

4. What have you learned about the part of the United States between the Rocky Mountains and the Mississippi that helps you to explain the following facts? (1) So much wheat flour is made in Minneapolis that it sometimes is called the "flour-mill city." (2) Denver sometimes is called a "gateway city." (3) Much meat packing is done in Kansas City, Kansas, in Omaha, St. Louis, and Denver. (4) Near the wharves of New Orleans, there are great cotton warehouses, and from this port much cotton is shipped. (5) In Texas, the leading manufacturing work is refining petroleum. Other important manufacturing work is the packing of meat, and the making of cottonseed oil, flour, and lumber.

5. Tell how the facts you have read help to explain why some of the cities you have listed have become large.

Directions for reading. — Now that you know more about why some cities become large centers of trade and manufacturing, it probably would be helpful for you to read again about work in New York City (pp. 10–15). There are some kinds of factories which you might find in almost any large city. Among these are bakeries, and ice-cream and candy factories; publishing plants, where books, magazines, and newspapers are printed; foundries and shops where machinery is made and repaired; and places where clothing is made. Such work, then, does not need to be discussed in connection with each of the larger cities. However, in many large cities there are particular kinds of manufacturing or of trade which have helped the cities to become important. Wherever this is the case, it is interesting to see what facts help to explain why these special industries have flourished so well there. Remember, then, as you read about the larger cities between the Rocky Mountains and the Mississippi, that besides the workers in the

Figure 142

By courtesy of the Denver Tourist Bureau

special factories or lines of business mentioned, there are many others doing work which is common to all cities.

Just as in New York City, some parts of every large city are used for stores, offices, and warehouses; some parts for parks and residences; and others for factories, railroad yards, and perhaps docks. When you visit or read about a city, it is interesting to try to find reasons, just as you did in the case of New York, why men have chosen for these uses the particular parts they have.

As you read the following paragraphs, check your answers to the preceding exercise in so far as you can.

The "mile-high city." — Find Denver again on the map in Figure 82. Do this map and the one in Figure 60 suggest to you any reasons why an important city has grown up at this place? Think of its central position in the grazing and forage-crop region, and of its relation to the central Rockies, with their cultivated valleys, pastures, mining centers, and playgrounds, and notice the railroads which connect it with the plains and mountains. Denver has been called the "queen city of the plains," but its life is also closely tied up with the mountains, which, as you can see from Figure 142, are in plain sight a few miles to the west. Much of its trade is with mountain settlements, its water supply comes from mountain lakes, winds from snow-capped peaks often temper the heat of summer, and chinook winds (p. 80) sometimes bring quick relief from winter cold. It is the gateway through which thousands of tourists pass each summer by rail and by automobile into the mountains. It is a favorite residence city for Colorado people, as well as the principal headquarters for tourists. After thinking about the location of Denver, and the kinds of work done in the surrounding lands, you now should see good reasons why it is a great sheep market, why slaughtering and meat packing are its leading manufacturing industry, why it makes mining machinery, and why it is an important beet-sugar center. What are these reasons?

The "twin cities." — Find Minneapolis and St. Paul again on the map in Figure 82. Does this map suggest to you any reason why these places are called the "twin cities"? The west line of St. Paul is the east line of Minneapolis, and except for the fact that each has its own government, the two cities really are one. Minneapolis, however, is chiefly a manufacturing center, while St. Paul is chiefly a commercial center.

Find in the airplane picture of Minneapolis in Figure 143 the falls in the Mississippi River. The power obtained from the falling water there helped greatly to make Minneapolis an important manufacturing city. Find the large elevators and mills to the left

Figure 143 *By courtesy of the Minneapolis Civic and Commerce Association*

of the falls. These are the great grain elevators and flour mills for which Minneapolis is famous. They were built near the falls because in early years mills that used water power had to be within a few hundred feet of the source of the power. Now, as you have learned (p. 66), power can be carried long distances in the form of electric energy. The flour mills of Minneapolis long since needed more power than could be had from the falls you see in Figure 143, and now they use much coal for power. On the map in Figure 82, notice the railroads which connect Minneapolis with the northern mixed-farming region, where so much spring wheat is grown. Do you see that it is an advantage to the milling industry to be rather near a great wheat-producing area? The value of the flour-mill and grist-mill products of Minneapolis is almost half that of all its manufactured products. Minneapolis and St. Paul are important railroad centers (Fig. 82), and in both cities more men work in the car and repair shops of railroads than in any other industry.

The valley of the Mississippi at St. Paul is one hundred to two hundred feet deep. Between the edge of the upland and the river, there are two benches, or " terraces," of land. The lowest land, near the river, is largely

Figure 144 *By courtesy of the Santa Fé Railroad Company*

occupied by railroad yards, and the second level by business houses. Along the crest of the valley bluff, looking down upon the lower city and the river, is the leading residence section. In Figure 144 you are looking from the river across part of the city. Can you find in the picture the three sections just mentioned? The island in the river is used as a park. Both St. Paul and Minneapolis have large and beautiful parks, some of which contain attractive lakes.

Iowa's largest city. — Find Des Moines again on the map in Figure 82. Notice its rather central position in the state and the railroads which connect it with the surrounding rich farming country. Its position and its railroads have helped it to become the chief business center of Iowa. Des Moines also has many kinds of manufactures for a city of its size. Some of its factories use coal that is mined close at hand. Why would this be an advantage? Finally, Des Moines, as you perhaps noted when you found the city on your map, is the capital of Iowa. You already know two facts about the city which help to make it a good place for the capital. What are they? Do not its business interests, its manufactures, and the state government work done there help you to see why it has become Iowa's largest city?

St. Louis. — Find St. Louis again on the map in Figure 82. Find East St. Louis, on the other side of the Mississippi. Although they are in different states, much of the work of the two cities is tied together so closely that they form one "metropolitan," or city, district. Years ago the prosperity of St. Louis depended largely on its river trade, and so the Mississippi was of great value to it. Now little freight is received or shipped by boat, and the city depends on its many railroads (Fig. 82). Indeed, the great stream is now a disadvantage to the city in some ways. It is a barrier between the two parts of the metropolitan district. Find in Figure 145 the bridges across the river. You can see one of them in Figure 146. It was very difficult and expensive to build these bridges, and all traffic across the river here, except that by boat, has to use these few bridges. The cost of many things that come into the city or leave it is increased by the extra charge made by railroads for taking them across the river. Some freight still moves by boat, and the value to the city of river transportation may increase in the future. Figure 146 shows freight being loaded from cars on to barges at the city-owned dock. The river barges will take this freight to New Orleans, where it will be shifted to ocean-going boats.

Compare the maps of St. Louis in Figures 227 (p. 186) and 145. Which shows you more about the work of the city? Find out from the legend of Figure 145 what the principal uses of land in St. Louis and vicinity are. Much of the city is built on a rolling upland and most of the railroads from the west either follow the floors of valleys cut in the upland by streams which enter the Mississippi, or extend along the side of the

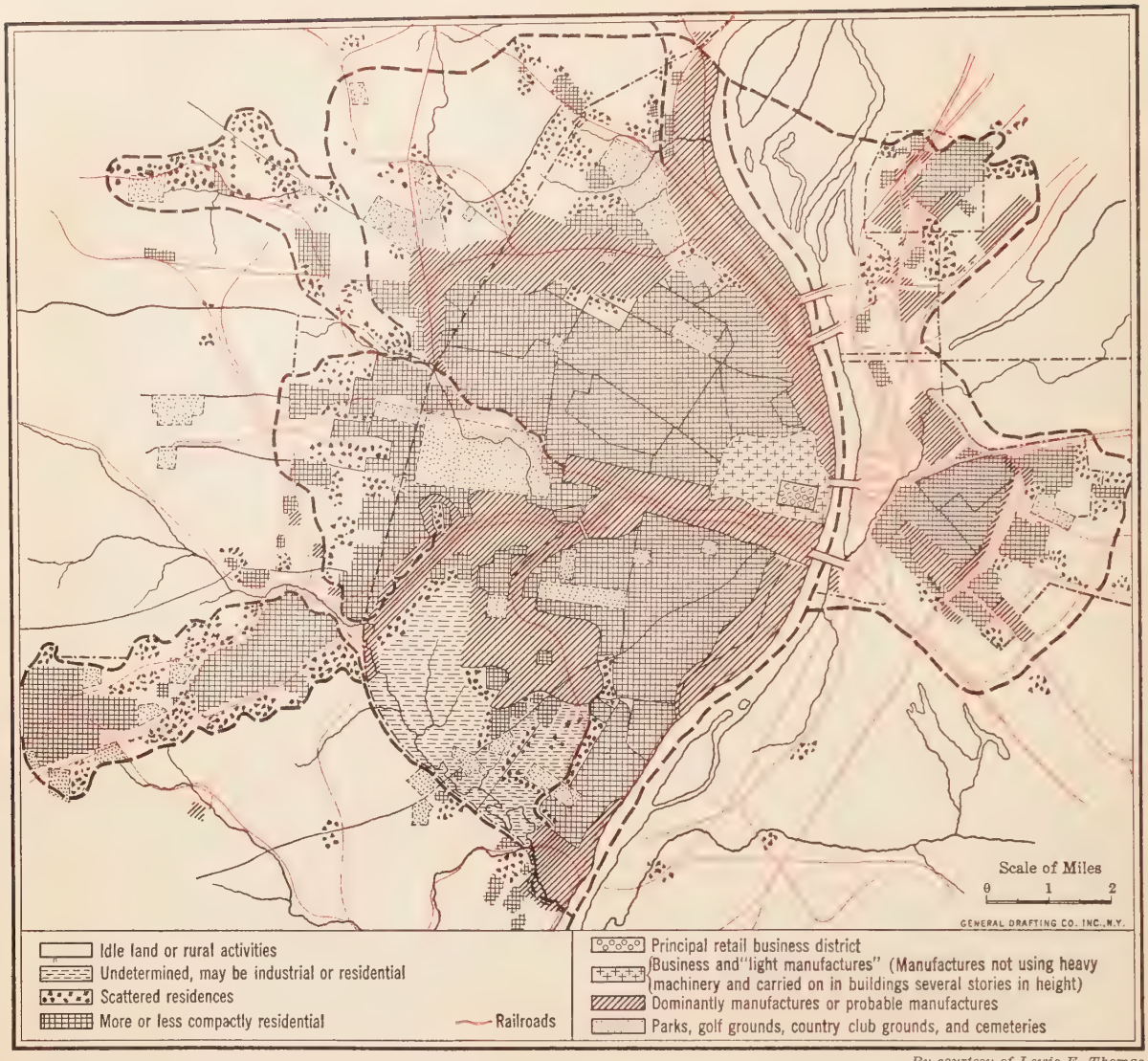


Figure 145. Principal uses of land in St. Louis and vicinity

By courtesy of Lewis F. Thomas

Mississippi itself. Do you see that it would be easier and cheaper to build railroads along the gently sloping valley bottoms than it would be across the rolling uplands? This led, in turn, to the building of factories and warehouses in these valleys, and so left the uplands between the valleys for business houses and residences. Do you not think the uplands would be more attractive places for homes? Why do you think so? Find in the northern part of the city the manufacturing section along the Mississippi. Here there are large railroad yards, lumber yards, warehouses of various kinds, metal-working plants, and wood-working factories. In the southern part of the city near the river there are large foundries. In the long manufacturing belt which follows the valley-bottom railroads westward from the Mississippi through the heart of the city, and in the manufacturing area in the northwestern part, there are many factories where boots and shoes, tobacco, clothing, and other things which can be made with light machinery in buildings of several stories are manufactured on a large scale. In the southwestern industrial section, steel plants and factories which make clay products are

Figure 146 © Ewing Galloway

located. Notice where the principal retail store section is. Do you think it is conveniently located for most of the people of St. Louis? For people coming from other places to the city to shop? Why do you think as you do about each of these questions?

Do you think a stranger entering St. Louis by one of the railroads shown on Figure 145 could get from the car window a good idea of St. Louis as a residence city? Why? Would you not like to look down on the city from the giant airship shown in Figure 147? This picture was taken from an army airplane flying still higher above the ground. It shows one of the attractive residence quarters of St. Louis, in a section where the upland is nearly level, and it suggests the irregular way in which the growing city is spreading out into the open country. Figure 145 shows even better the very irregular border districts of the city. Notice on the map the relation of the outlying city districts to railroads. If you were to live in the western outskirts of the city and went each day to work in the city at a place eight to twelve or more miles away, would you want your home rather near a railroad or far from it? Why?

Do you live in a city? If so, are some of the things you have learned about the uses of different kinds of land in St. Louis true also of your home city?

Three Missouri River cities. — Find again on the map in Figure 82 Omaha, Kansas City (Kansas), and Kansas City (Missouri). The last two are "twin cities," just as St. Paul and Minneapolis are. Each, of course, has its own city government, for one is in Missouri and the other in Kansas, but in all other ways only an imaginary line divides them. In one place this "line" follows the center of a street. They have the same street-car system, the same telephone service, and form one manufacturing and business city. You may think of them together as "Greater Kansas City."

Notice on Figure 82 the railroads that extend from Omaha and Greater Kansas City into the surrounding country and to other parts of the Western Interior. Omaha sometimes is called a railroad gateway to the West, and Kansas City often is called the gateway to the Southwest. Find the places of these cities on the maps in Figures 106, 107, and 92. Do you see that both are good places for slaughtering and meat-packing plants? You do, if you see that they are convenient places to which to bring cattle, hogs, and sheep, and from which to distribute meat products. The slaughtering and packing industry is by far the most important one in both Omaha and Greater Kansas City. Find the places of these cities on Figures 101, 104, and 96. How do the maps and what you have learned about these cities as railroad centers help you to explain the fact that they manufacture much flour, and handle large quantities of wheat and of hay? Kansas City is the largest market for winter wheat and for hay in the United States.

Figure 148 shows the sky line of the business district of Omaha. Which of the buildings do you think are probably newer, the taller ones or the lower ones? Even where, as in the case of Omaha, there is plenty of room for a growing city to spread, there is a

Figure 147

By courtesy of the United States Army Air Service

tendency for old buildings in the business section to be replaced from time to time by new ones that are much taller. This is partly because it is convenient to have office buildings, banks, hotels, department stores, and the like fairly close together, and perhaps also because the surrounding land is put to other uses which it is not easy to displace.

Figure 149 is an airplane view looking a little north of west across part of Kansas City, Kansas, from a point above the western edge of Kansas City, Missouri. The boundary between the two cities and the two states crosses the lower part of the picture along a horizontal line which, at the right, is only a little below the bank of the river. The river you see in the picture is the Kansas River, which flows into the Missouri to the right, or north, of the limits of the picture. Notice the railroads that follow the river near its banks, and the railroad yards in the foreground. Most of the big manufacturing plants and many wholesale business houses at Kansas City are in the valley bottoms, near railroads. The packing plants begin on the farther bank of the river, to the left of the nearest bridge, and extend some blocks downstream. The huge building not far from the upper right-hand corner of the picture is a grain elevator. Beyond the river, near the upper edge of the picture, there is a " farm " of petroleum tanks. The higher land outside the valley bottoms in Greater Kansas City is used chiefly for retail business, for homes, and for parks. Some of the valley bluffs form part of the park and boulevard system, the famous " Cliff Drives " running along them. Do you think the edge of the valley bluffs would be a good place for a boulevard? Why?

New Orleans. — Find New Orleans and the large lake just north of it on the map in

Figure 148

By courtesy of the Omaha Chamber of Commerce

Figure 149

© Fairchild Aerial Camera Corporation

Figure 82. In Figure 150 you are looking northeast from an airplane across part of the city to the lake in the distance. As the picture shows, the city is built on low, almost flat land. It is part of the delta of the Mississippi, and the lake is a part of the sea that was not filled in by the deposits made by the river.

The river and lake are so important in the life of the city that they are commonly

By courtesy of the United States Army Air Service

Figure 150

By courtesy of Chas. C. Colby

Figure 151

© Ewing Galloway

Figure 152

referred to in indicating directions, even on engineering maps. Dikes, or levees, protect the low-lying city from the high waters of the river and lake. You can see part of a levee at the right of the picture in Figure 151. Hemmed in by the river, the lake, and by

Figure 153

By courtesy of the Dallas Chamber of Commerce

swampy lands, New Orleans is a closely built city, and has few suburbs. The water in the ground is so near the surface that many houses are without cellars. Cypress is the favorite wood used in building houses. As you have learned, it is abundant in the area, and in addition it is not affected by dampness. The narrow streets in some parts of the city are shaded by close-set houses, many of which have second-story balconies. This shade is very welcome on hot summer days.

New Orleans ranks next to New York among the ports of the country in the number of tons of goods received from and shipped to foreign lands, and also has a very important trade by water with other American ports. Miles of its water front are lined with docks, freight sheds, warehouses, elevators, and the like. These are served on the land side by railroads, and many of them have the most modern machinery for handling freight. How many ships can you count alongside the freight sheds in Figure 150? Some of them may have come from foreign lands and some from other seacoast cities of the United States. In a trip along the water front you might see ships unloading sugar, coffee, bananas, burlap, dry goods, hardware, cement, or other things needed by the people of New Orleans or by those of the cities, towns, and farm lands for which New Orleans receives goods. What products of the back country would you expect to see being loaded on to ships if you were to make a trip along the water front? Did you think of cotton, cottonseed oil, cottonseed meal, rice, sugar and molasses, and lumber?

The leading manufacturing section of the city extends for some sĕven miles along the river, close to the docks. Does this seem to you a good place for factories? Why? Among the factories of New Orleans, as you now might expect, are mills in which rice is cleaned and polished, cottonseed-oil mills, and

By courtesy of the San Antonio Chamber of Commerce

Figure 154

sugar refineries. The big ships at the left of Figure 151 are unloading raw sugar brought from another sugar-growing country. The sugar will be refined in the plant whose stacks show at the right of the picture.

Find in the upper center of the picture in Figure 150 the waterway marked " 1." This is part of the new Inner Harbor Navigation Canal, which extends from the Mississippi River across the city to the lake, a distance of about five and one-half miles. In Figure 152, you see several craft passing through the canal. The " inner harbor " which the canal forms adds nearly twelve miles to the water front of New Orleans, and it is expected that in time much of the land along it will be used for manufacturing plants.

Some Texas cities. — Find again on the map in Figure 82 the cities of San Antonio, Dallas, Houston, and Fort Worth. These are the largest four cities of Texas, and the leading manufacturing cities of the state. All are important railroad centers. Can you think of good reasons why slaughtering and meat packing are carried on in all four? Why Dallas and Houston are good places to make cottonseed products? Why much rice is cleaned and polished in Houston? Why petroleum is refined in Fort Worth and Houston? Perhaps you will be helped in thinking of good reasons for these facts by studying again Figures 92, 106, 107, 110, 111, and 43. Fix as closely as you can the positions of the cities on these maps, and think of the means which they have for gathering the things used in these industries and for distributing their products. How does the view in Figure 153 suggest that Dallas is an important business center?

San Antonio (Fig. 154), as you perhaps realized when you studied the maps mentioned in the preceding paragraph, is near

Figure 155 *By courtesy of E. N. Townsend*

the eastern edge of the grazing and forage-crop region and the western edge of the southern mixed-farming region. Quite naturally, then, it is the business center for the vast live-stock and farming lands of southern Texas. San Antonio is a famous health and pleasure resort, as well as a manufacturing and business center. Its mild winter temperatures, dry, pure air, strong sulphur waters, and near-by Spanish missions help to attract many visitors. It is the winter home of many northern people.

Find Galveston on the map in Figure 82. The city is on a sandy island, just off the coast. Years ago it was partly destroyed by a dreadful storm. Much of the damage was done by water which was driven over the low island by the high winds. To prevent another such disaster, a concrete sea wall, seventeen feet high and several miles long, was built on the Gulf side, and the level of the city was raised three to twelve feet. To permit large ships to reach the docks along the inner shore of the city, vast sums were spent in improving the harbor. Long walls, or "jetties," were built to protect the entrance from drifting sand, and the channel was deepened many feet by dredging. Material dredged from the bottom of the channel was used to raise the level of the city. In these ways, then, men changed the island and harbor which they wished to use as a seaport, and overcame the chief disadvantages of the place. In Figure 155 you are looking across the city to Galveston Channel from an airplane above the Gulf of Mexico. Along the shore of the sheltered channel are the piers and railroad terminals of the city, together with huge elevators, oil storage tanks, and warehouses.

Figure 156 *By courtesy of the United States Department of Agriculture*

The two things shipped in largest quantities from Galveston are cotton and wheat. In order to save ship space, the bulky bales of cotton are put in big "presses," which squeeze them down to about a third of their original size. Freight vessels commonly carry 12,000 to 18,000 bales of compressed cotton. Several fleets of large tankers ply to and from Galveston, bringing petroleum from Mexico and taking petroleum and some of its products to Atlantic Coast ports. Galveston is the chief pleasure resort of the Texas coast. Many people seek relief from the cold of northern winters or from the summer heat of inland Texas by visiting the seashore at Galveston.

Exercises and Games

Cities of various sizes. — On your outline map on which you colored the land between the Rocky Mountains and the Mississippi River, make dots which will stand for the cities in this section in which there are more than 100,000 people. Do not print the names of the cities on your map. You should now be able to tell the name of each as you look at the dot which stands for it. What will signs for these cities now suggest to you?

Capitals. — Find on the map in Figure 82 Topeka, Lincoln, and Jefferson City. This map shows you that what special kind of work is done in these cities? How does the location of Jefferson City in its state differ from the locations of Topeka and Lincoln in their states? How does the map in Figure 80 help you to explain this difference? (P. 68.)

New lists. — 1. Make lists of all the things which each state or part of a state between the Rocky Mountains and the Mississippi now suggests to you.

2. Make a list of all the new facts about the *West* which you can learn from the maps on pages 85, 88–90. From the map in Figure 97, for example, you can tell at a glance in which two states of the West you could see most land used for growing sugar beets.

Corn planting and distance from the equator. — By comparing the maps in Figures 96, 97, 100, 101, 102, 103, 104, 108, 109, 110, and 111, tell which two of the crops with which these maps deal are distributed most widely between the Rocky Mountains and the Mississippi River. What reasons for the wider distribution of these crops can you give? What have you found about the times of planting corn in this part of the United States? About how many degrees from the equator is New Orleans (Fig. 82)? Minneapolis? How many degrees apart are they? Each degree makes a difference of about four days in the time of planting corn in a land which is everywhere about the same height above the sea. Since southern Minnesota is higher than Louisiana, as well as farther north, the difference is a little more than four days to the degree. About how many days' difference would you expect, then, between the time of planting in southern Louisiana and that in southern Minnesota? Corn planting begins February 21 to March 1 in southern Louisiana, and May 1 to May 11 in southern Minnesota. Does this agree with your answer?

A farm puzzle. — The picture in Figure 156 was taken in one of the regions between the Mississippi and the Rockies. It should suggest either of two regions to you. Which two are they? Name at least two things in the picture which helped you to make a decision.

Pictures and advertisements. — You might make for your notebook or for your school a collection of pictures that were taken between the Rocky Mountains and the Mississippi River. It is fun to put the titles of such pictures on the *back* of the paper on which you mount them, and then see if the others in the class can tell in which region a given picture was taken, just as you were asked to do in the picture puzzle above. You can tell from the List of Illustrations whether or not you placed that picture correctly. You might make, too, a collection of clippings about these regions or of advertisements of things raised or made in them. Some of these also you could use for puzzles.

"Animated graphs." — Drawings such as those you made to show how corn is used, the part of the wheat crop which is sent away from the place where it is raised, and how much cotton lint, oil, and other products can be made from a wagon load of seed cotton, are called "graphs." You might

some time give a "geography program" for your parents or for other children, and in connection with your talks to them you could use "animated graphs." These are graphs which you make before the audience as you give your talk.

For example, you could make in the following way animated graphs which would help you in explaining the differences between work in the grazing and forage-crop region and that in the mixed-farming regions. Draw on a blackboard, or on large sheets of cardboard, five sets of twelve cans, making each can ten inches tall and two inches wide. Use one set to show the rainfall at a place in eastern Colorado, in the grazing and forage-crop region. As you talk, color blue the lowest quarter of an inch of the first can. Explain that this shows the amount of rain which falls there in January (p. 34). Color blue the lowest half inch of the second can, to show that half an inch of rain commonly falls there in February. On each of the cans you can mark lightly beforehand the place to which you wish to "fill it." Fill the March can to a depth of one inch; the April can to a depth of two inches; the May can, two inches; June, two inches; July, three inches; August, two inches; September, an inch and a quarter; October, an inch; November, half an inch; and December, half an inch. Show that the total average rainfall for the year at this place in eastern Colorado is only sixteen inches.

Use another set of cans to show average rainfall and snowfall at a place in eastern North Dakota, in the northern mixed-farming region:

January,	$\frac{1}{2}$ inch	July,	$2\frac{3}{4}$ inches
February,	$\frac{3}{4}$ inch	August,	$2\frac{1}{2}$ inches
March,	$1\frac{1}{4}$ inches	September,	$1\frac{1}{2}$ inches
April,	$2\frac{1}{4}$ inches	October,	$1\frac{1}{4}$ inches
May,	$2\frac{1}{2}$ inches	November,	$\frac{3}{4}$ inch
June,	$3\frac{1}{2}$ inches	December,	$\frac{1}{2}$ inch

Total, 20 inches

Use a third set of cans to show average rainfall and snowfall at a station in central Iowa, in the central mixed-farming region:

January,	$1\frac{1}{4}$ inches	July,	$4\frac{1}{2}$ inches
February,	$1\frac{1}{4}$ inches	August,	$3\frac{1}{4}$ inches
March,	$1\frac{3}{4}$ inches	September,	$3\frac{1}{2}$ inches
April,	$2\frac{1}{2}$ inches	October,	$2\frac{1}{2}$ inches
May,	$4\frac{1}{2}$ inches	November,	$1\frac{1}{2}$ inches
June,	$4\frac{1}{2}$ inches	December,	$1\frac{1}{2}$ inches

Total, $32\frac{1}{2}$ inches

Use a fourth set of cans to show average rainfall at a station in eastern Texas, in the southern mixed-farming region:

January,	$1\frac{3}{4}$ inches	April,	$3\frac{3}{4}$ inches
February,	$2\frac{1}{4}$ inches	May,	$4\frac{3}{4}$ inches
March,	$2\frac{1}{2}$ inches	June,	$3\frac{1}{2}$ inches
July,	$3\frac{1}{2}$ inches	October,	3 inches
August,	2 inches	November,	$2\frac{1}{2}$ inches
September,	$2\frac{1}{2}$ inches	December,	$1\frac{3}{4}$ inches

Total, $33\frac{3}{4}$ inches

Use a fifth set of cans to show average rainfall at a station in southern Louisiana, in the coastal mixed-farming region:

January,	$4\frac{1}{4}$ inches	July,	7 inches
February,	$4\frac{3}{4}$ inches	August,	$5\frac{1}{2}$ inches
March,	4 inches	September,	$3\frac{1}{2}$ inches
April,	4 inches	October,	3 inches
May,	4 inches	November,	$3\frac{1}{2}$ inches
June,	$6\frac{1}{2}$ inches	December,	$4\frac{1}{2}$ inches

Total, $54\frac{1}{2}$ inches

When these sets of graphs are all shown at once, it will help your audience greatly to see clearly the differences in rainfall in these regions.

Suggestions for extra work. — 1. Make in a sand pan a model of the part of the United States between the Rocky Mountains and the Mississippi River, using the maps in Figures 82, 23, 17, and 16 to help you. Be sure to show the gradual eastward slope of the land, the Black Hills and Ozark Plateau, and the valleys of the larger rivers.

2. On the straight edge of a piece of paper, put two marks to show the distance that stands for two hundred miles on the map in Figure 23. Then, placing the left mark under the "0" in the scale for Figure 82, compare the scales for these two maps. Compare the scales in Figures 23 and 27. Do you see that the maps in Figures 27 and 82 are drawn on somewhat larger scales than that used in Figure 23? If a map of the United States were drawn on the scale used in Figure 82 or in Figure 27, would it be larger or smaller than the map in Figure 23?

A new game. — *Ten questions:* The leader of the game says, "I am thinking of a state in the United States which is west of the Mississippi River." (Since most of Minnesota and Louisiana are west of the Mississippi, these may be included in the list.) He then calls the name of the pupil at the left end of the first row. Each pupil whose name is called asks a question about the state *which can be answered by "Yes" or "No."* For example, he asks, "Is it east of the Rocky Mountains?" The leader answers "Yes," and calls upon the next pupil in the first row. This pupil might ask, "Does it touch the Mississippi?" The leader answers "No," and calls the name of the next pupil in the first row. By this time you should all see that the leader has in mind either North Dakota, South Dakota, Nebraska, Kansas, Oklahoma, or Texas, and so, if the next pupil called upon is wise he will ask if it is one of these states. Suppose he names Oklahoma. If the leader says "No," the pupils whose

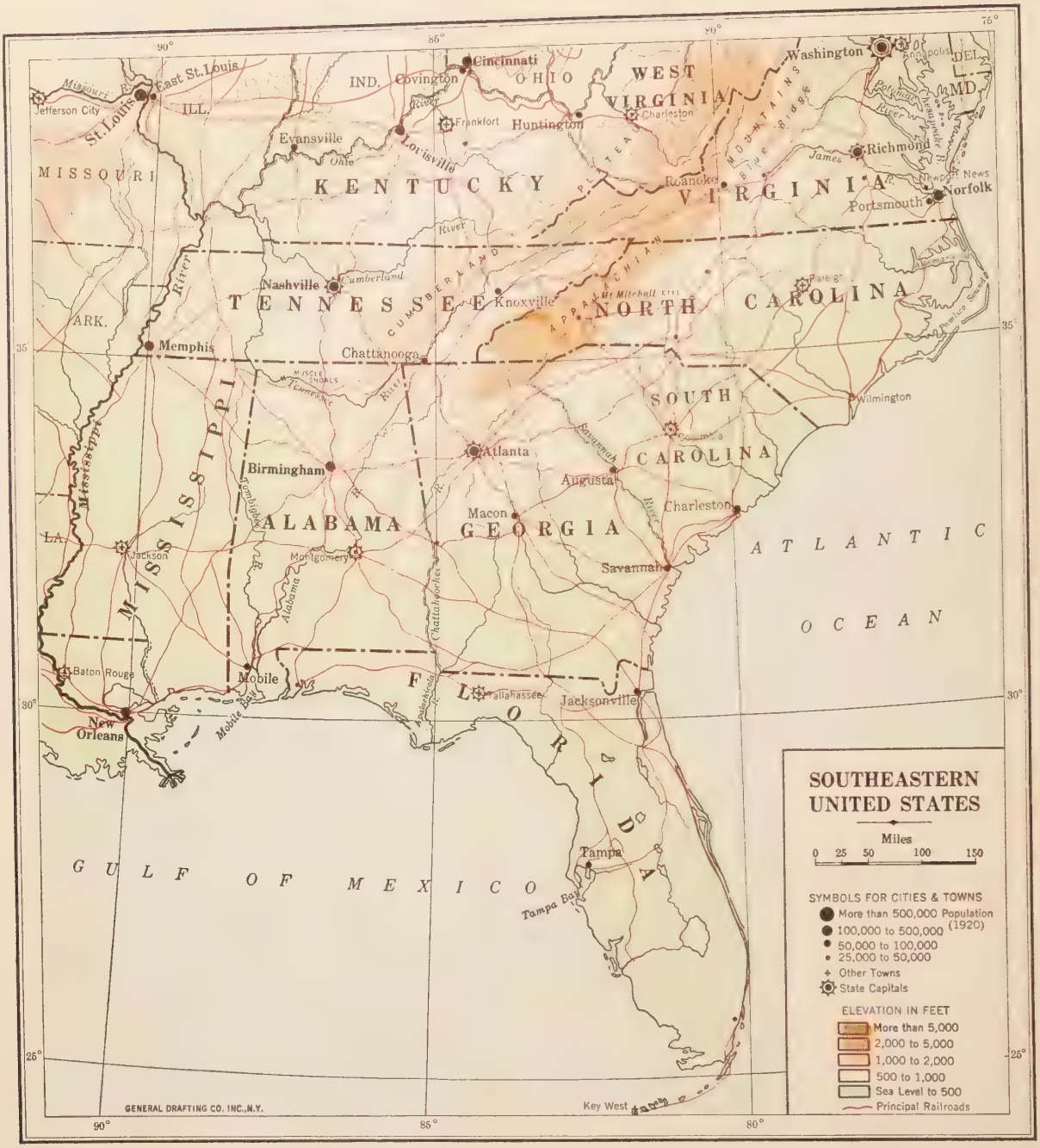


Figure 157

turns follow should name others of these states until the right one is found. The child who names the state which the leader has in mind may then be leader, unless the class has had to ask more than ten questions in order to find the state. If ten questions are asked without finding the right state, the leader has another turn. The next time the leader calls, in order, on pupils who have not yet had a turn to ask a question. When every pupil has had a chance, the leader may start again with the first row.

Old games. — Do you remember how to build pyramids with names, and how to play "Jumble Square"? (*Journeys in Distant Lands*, pp. 64, 110.) Do not forget to play these and other old games with the names of states, cities, rivers, etc., which you have learned.

Figure 158

© *Ewing Galloway*

SOUTHEASTERN UNITED STATES

South of the Ohio and Potomac. — 1. On the outline map on which you have colored the lands west of the Mississippi, color lightly, with a color different from any you already have used on the map, the states south of the Ohio and Potomac rivers (Fig. 157). Include all of West Virginia.

2. Put a "5" on your map in westernmost Tennessee, another in eastern North Carolina, and scatter "5's" through Mississippi, Alabama (excepting the northeastern part), Georgia (excepting the northernmost part), and South Carolina.

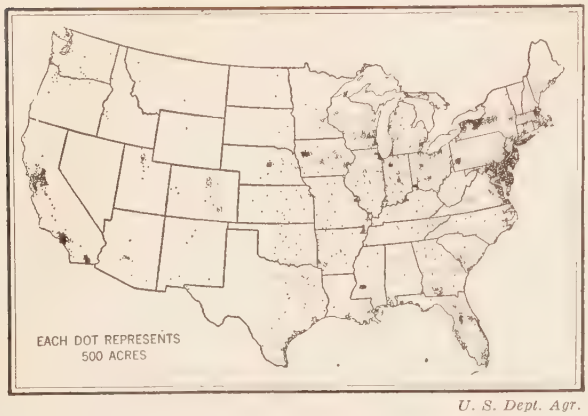
3. All the parts of the Southeast which are numbered "5" on your outline map are parts of the southern mixed-farming region. Print the name of the region on your map so that the name will show what states and parts of states, both west and east of the Mississippi, are in the region. What kinds of crops does this name now suggest to you? The picture in Figure 158 shows at least one of the things you should expect to see in the eastern part of this region. What is it?

4. On your outline map, put "1's" in central Tennessee and in central and western Kentucky.

5. Find these parts of Kentucky and Tennessee on the maps in Figures 100, 101, 103, 104, 105, 106, 107, 110, and 111. How do the maps suggest that these parts of Tennessee and Kentucky belong to the central, instead of to the southern, mixed-farming region? What crop, however, which you did not see west of the Mississippi, do you find much land here used for (Fig. 110)?

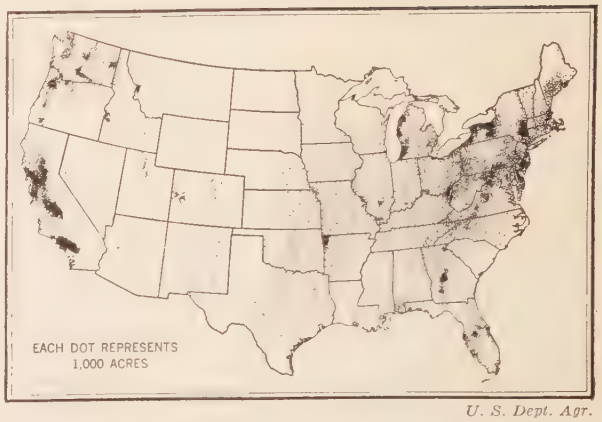
Do not yet print the name "central mixed-farming region" on your outline map, for part of this region is north of the Ohio River.

6. Find on the maps in Figures 23 and 157 the highlands of Southeastern United States. Put "6's" in eastern Kentucky, eastern Tennessee, northeastern Alabama, northernmost Georgia, western North Carolina, western Virginia, and West Virginia. As the dot maps you have used in studying the other regions will show you, the crops raised in this highland area are much the same as those of the central mixed-farming region. The ways of working and of living in the rougher parts of the highlands are so different, however, from those of the lowlands that it is convenient to think of the



U. S. Dept. Agr.

Figure 159. Acreage of vegetables grown for sale



U. S. Dept. Agr.

Figure 160. Acreage of fruits and nuts grown for sale

area as in a separate, or highland mixed-farming region. Part of this highland region is in Northeastern United States. How would you expect men's work and their uses of land in the highlands to differ from work and uses of land in the neighboring lowlands?

7. On your outline map, put " 7's " in Florida. The map in Figure 111 suggests why Florida does not belong to the southern mixed-farming region. Tell how. How do the maps in Figures 97 and 110 suggest that it does not belong to the coastal mixed-farming region?

Florida also differs from the southern and coastal mixed-farming regions in that its most valuable crops are those suggested by the maps in Figures 159 and 160. What are they? Do not name the region, however, till you learn more about it.

8. On your outline map put one " 8 " in north-central North Carolina and other " 8's " in eastern Virginia. Notice on the map in Figure 157 the peninsula just east of Chesapeake Bay. On it find parts of three states. This peninsula is called " Delmarvia." Can you find in this name three letters from the name of each state which forms part of the peninsula? Most of Delmarvia is northeast of the Potomac, but the parts of Virginia and North Carolina which you numbered " 8 " are the southern part of the " Delmarvia mixed-farming region." What does the fact that it is a *mixed* farming region suggest to you?

Cities of Southeastern United States. — From the map in Figure 157 make a list of the names of the seven cities in the southeastern states in each of which more than 100,000 people live. You studied about New Orleans in connection with the lands west of the Mississippi River because most of Louisiana is west of the river. At New Orleans, however, materials are collected from several southeastern states, too, and goods likewise are distributed from New Orleans to them. You should think of New Orleans, then, as belonging also in the southeastern group of cities. It is much larger than any of the seven cities which you listed.

Do not the facts you have learned from the study of Figure 157 and of the dot maps suggest to you some of the kinds of products you could see being handled in southeastern cities? If so, name the products you would expect to see in the freight yards and warehouses or at the wharves of these cities. Are there any special kinds of mills or factories which you would expect to find in these cities? If so, what kinds?

Directions for reading. — As you read the following pages, (1) check, in so far as you can, the answers you have given to the questions about regions in Southeastern United States; (2) find how the parts of the central and southern mixed-farming regions in the Southeast differ from other parts of these regions about which you have read; (3) find all of the ways you can in which the highlands, Florida, and the Delmarvia mixed-farming region differ from one another and from the southern and central mixed-farming regions; and (4) find reasons for these differences.

In the Southern Mixed-Farming Region

A " land of cotton." — In the eastern part of the southern mixed-farming region, as in the western part, the raising of cotton is so important that the whole region often is called the " cotton belt." In most parts of the cotton belt more than a third of all the lands used for crops is planted in cotton, and in some districts three-fourths of the crop land is used for it. Less than a third of all

Figure 161 *By courtesy of the Memphis Chamber of Commerce*

the land of the region, however, is used for crops. As the map in Figure 29 shows you, there is much forest and woodland. There also is much brush and cut-over land, and much swampy, rough, or stony land. As you travel through the region, then, you find it in most places quite different in appearance from the farm lands in the heart of the central mixed-farming region.

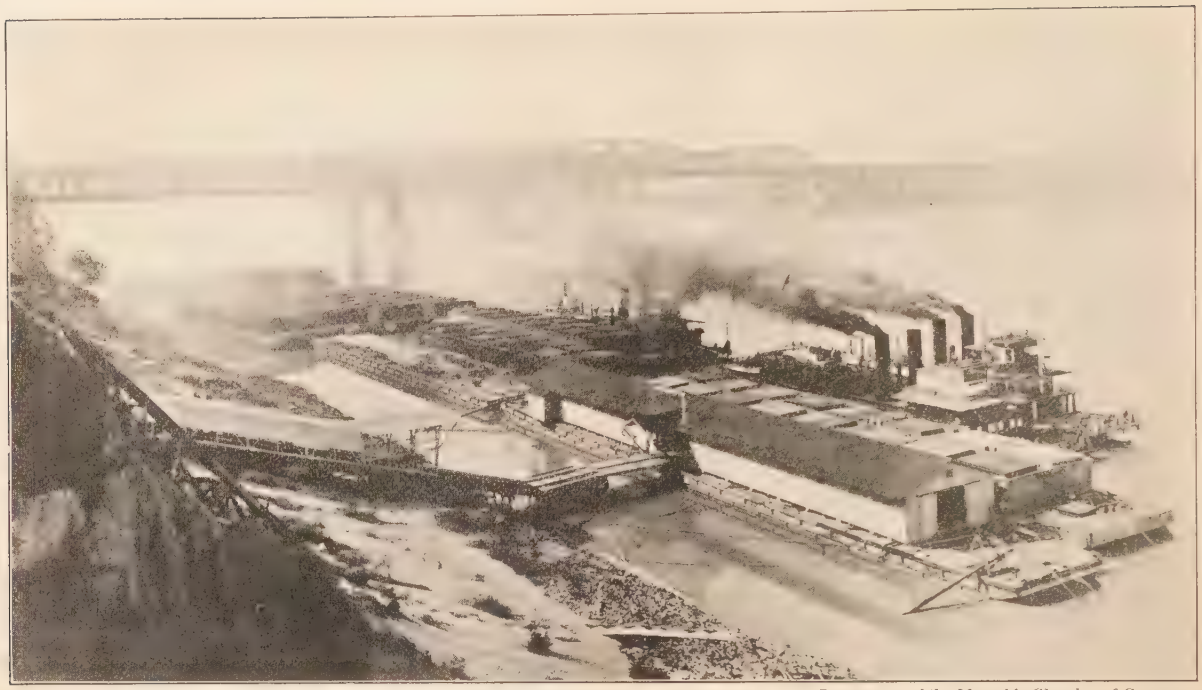
In the "black belt." — Imagine yourself in a little town in the heart of the Alabama cotton country on a Saturday afternoon in summer. If you were to walk along the main street, you could keep in most places under the shade of roofs or balconies which extend over the sidewalk in front of the one- and two-story buildings. Even near the stores there are a few trees. Toward the ends of the street there are more shade trees, and stores give place to houses. You would see many more negroes than white people on the street, for on Saturday afternoons many of them come to town to do their week's trading. Side by side with automobiles parked along the street are hitched their mule-drawn carts and wagons.

Strolling along the residence streets, you would pass some houses that are small and others that are called "mansions." Most of these larger homes are surrounded by grounds of several acres, and are set amidst widespreading trees. Their tall, pillared porches and balconies give them a stately air. Many of them are owned by "planters," and are spoken of by the negroes of the plantations as the "big houses." Most of the negro servants of the planters live in small, unpainted cabins in the negro section of the town, or on the outlying plantations.

Leaving the town, you could ride through miles of gently rolling prairies spotted with oak woodlands. Here and there you would cross gullies and steep-banked streams. On some of the slopes, patches of white, chalky rock, from which the soil has been washed away, stand out gleamingly against the rich black earth. Many of the fields of cotton and of corn are irregular in shape, and rather small. Here and there is the attractive house of an overseer, but most of the dwellings are negroes' huts, standing unpainted and without shade in the open fields. This prosperous part of Alabama is famous for its excellent crops, and often is called the "black belt" because of its dark, fertile soils.

The cotton map. — Notice on the map in Figure 111 that in some parts of the cotton belt much more land is used for cotton than in other parts. In general, the parts where most land is used for cotton and where cotton lands produce most heavily are those in which the soils are most fertile.

Sending cotton down the Mississippi. — On the map in Figure 157, find Memphis, Tennessee. In what part of the state is it? On what river? From Figure 111, what do you find about the lands near Memphis? Would you not expect, then, to find cotton warehouses in this city? To what seaport would you expect cotton to go from Memphis? Why? In Figure 161, you can see cotton being brought from Memphis ware-



By courtesy of the Memphis Chamber of Commerce

Figure 162

houses to be loaded on river steamboats or barges and carried down the Mississippi to New Orleans. Although the river valley is more than thirty miles wide at Memphis, the main channel of the river lies close to the eastern bluffs. The city is built on the upland, about forty feet above the high water level of the river. Do you see, then, why the cotton comes "down hill" from the warehouses to the barges and boats? In Figure 162, you are looking across the river from a place high on the Memphis bluff. Find in it loading "tracks" such as those in Figure 161. These lead to "wharf boats" which rise and lower as the level of the water in the river changes. To the right of these floating boat docks, you can see river steamers waiting for cargo. Nearer the bridge, there are loaded barges ready to be towed away.

Cotton-cloth mills. — By no means all of the cotton grown in the Southeast is shipped away, however. Much of it is used in mills where it is made into cotton cloth. The mill shown in Figure 158 is in North Carolina. On the map in Figure 157, find the rivers shown in Georgia, South Carolina, and North Carolina. In what general directions do they flow? Do you see why? In many of these rivers there are rapids or falls at the places where the rivers flow from the higher land to the coastal lowland, or plain. This is because the rivers have not been able to cut their valleys in the harder rock of the higher land as fast as they have in the softer materials of the coastal plain. Mills which make cotton cloth can use the power furnished by these falls or rapids. Most of the cotton-cloth mills of the Southeast, then, are in North Carolina, South Carolina, and Georgia. In Figure 157, find the sign for Augusta, Georgia. On what river is it? In Figure 163, you see part of this river, and some large cotton-cloth mills which can use power furnished by the falls of the river.

The spread of mixed farming. — The boll weevil and other insects have troubled cotton growers of the Southeast just as they have those west of the Mississippi, and,

Figure 163 © Detroit Publishing Company

Figure 164 By courtesy of the Southern Railway System

partly as a result, many farmers are now using part of their lands not only for corn but also for other crops and for pasture. Many of these crops are those used as stockfeed.

In some parts of the southern states, Spanish peanuts are grown for hay, as food for hogs, or as a fertilizing crop. A field of Spanish peanuts looks somewhat like a field of beans or peas. Since these peanuts require only four months to mature, in many cases they are planted in a field after a grain crop has been harvested from it. If mowed before the leaves fall from the vines, these plants make good hay. The mowed field then may be grazed by cattle, and, finally, hogs may be turned into the field to root out the "nuts," which grow underground. Another plant grown as forage for stock is sweet sorghum, or "sorghum cane." This looks much like sugar cane, but does not need so long a growing season.

Figure 165 By courtesy of the International Harvester Company

In many cases the leaves are stripped off to feed to stock and the stalks or "canes" are used for making sirup and molasses. As the maps in Figures 105, 106, and 107 show, many cattle and hogs are raised in the Southeast. The farmers are learning that they can make their land produce more cotton by rotating crops than by growing cotton year after year in the same fields.

In Figure 164, you see Georgia land which is used for growing peaches. Many acres of land there are used for this purpose (Fig. 160). Other lands in the southeastern states, especially those near cities, are used for other kinds of orchards, for truck gardens, and for dairy farming.

On one Georgia plantation, for example, which contains five hundred fifty acres, the planter, with the aid of five croppers and two "wage hands," raised in a recent year seventy-five acres of cotton, ninety acres of corn and peanuts, eighty acres of winter oats, and three acres of sweet potatoes. The peanuts and sweet potatoes were "hogged off." More and more, then, farming in the "cotton belt" is becoming "mixed farming."

Southeastern woodlands. — What work is suggested by Figures 165, 166, and 167? The little sawmill in Figure 165 can be hauled from place to place by the tractor, which also furnishes the power to run it. What use is being made of the South Carolina woodland in Figure 167? Figure 166 is an airplane view of a lumber company's plant in Mississippi. Can you find in it piles of lumber into which logs have been cut? The railroad

© H. J. Harvey. By courtesy of the Wausau Southern Lumber Company

Figure 166

By courtesy of the United States Forest Service

Figure 167

on which the lumber can be shipped away? The water in which logs to be cut are lying? The mills in which the lumber is made? The tall structure near the mills from which smoke is rising is a "waste consumer," in which sawdust and slabs are burned. None of the southeastern states produces so much lumber as Louisiana does, but they produce so much that you might think of them as forming a lumbering and mixed-farming region.

Turpentining. — In Figure 168, you see a special kind of forest work — the gathering of "resin" from which turpentine is made. If the trunk of a longleaf pine is "chipped" or injured, a thick, oily substance called resin flows slowly from the wound. The two common methods of gathering resin are called the "box" method and the "cup and gutter" method. The trees you see in Figure 168 are being worked by the poorer, or "box," method. Deep cuts, or "boxes," have been made near the bottoms of the trees. Above them, V-shaped wounds have been chipped in the trunks. As the resin flows from a wound, it gathers in the "box." About once a week from early spring to late autumn, fresh cuts are made, one above another, to keep the resin flowing. From time to time, workers, such as

Figure 168

By courtesy of the United States Forest Service

Figure 169

the one you see in Figure 168, collect in buckets the resin in the boxes. A much better method is that which has been used on

By courtesy of the United States Forest Service

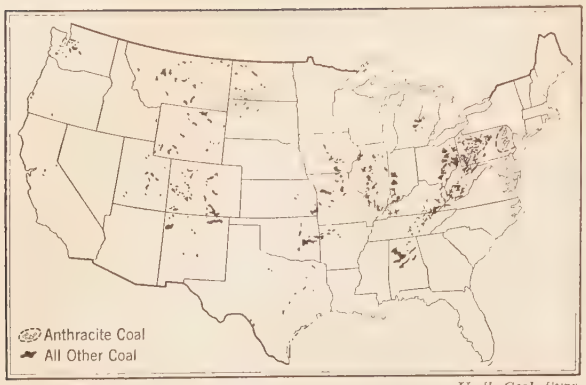
Figure 170

the tree in Figure 169. Instead of making a deep cut in which the resin will collect, gutters are fastened to the tree and the resin flows through them into a "cup" fastened to the trunk below. Less resin is wasted in this way, and the trees can be worked much longer than those which are boxed. Turpentine is gathered not only from longleaf pines, but also from a few other kinds of southern pines.

Figure 170 is the picture of a turpentine "still." The resin is hauled to the stills in barrels. There it is put in large, covered copper kettles and heated, so that the turpentine is "distilled" from it. The material that is left is rosin. The turpentine then is shipped away from the stills in wooden barrels which are coated on the inside with glue to keep the turpentine from soaking through the wood.

Most of the resin collected in the United States comes from the states of the southern mixed-farming region. The two Carolinas and Arkansas, however, produce very little.

Iron, coal, limestone, and steel. — Find northern Alabama in Figure 42. What does this map show you about this part of Alabama? Figure 171 shows you that there are other mines not far from the iron-ore mines. What is mined in them? However, you can



U. S. Geol. Surv.

Figure 171. Districts producing coal

see from this map that coal is mined at many places in the states you already have studied. The fact that coal and iron ore are mined near each other here gives special importance to this district.

On the map in Figure 157, find Birmingham, Alabama. The picture in Figure 172 shows steel mills there. Iron ore, coal, and limestone are needed in making steel, and since all these materials are found near Birmingham, much iron and steel are made there. How do these mills differ in appearance from other mills and factories which you have seen? After studying this picture, could you recognize steel mills wherever you might see them? If so, how? In the huge furnaces, the iron ore, "coke" or roasted coal, and limestone are heated together to make steel. Several thousand men in Birmingham make their living by working in these mills.

Of course not all the coal mined in Alabama is used in steel mills. It is also used as fuel in many other factories, and in many homes.

Muscle Shoals. — Northern Alabama is rich not only in coal, but also in water power. Find on the map in Figure 157 the part of the Tennessee River which flows through northern Alabama, and the place on it called Muscle Shoals. Figure 173 is an airplane picture of "Wilson Dam," which the United States government has built across the river there in order to make it possible to use the

© Ewing Galloway

Figure 172

power furnished by the rapids in that part of the river. The great dam is more than three-fourths of a mile long. It is expected that part of the power developed at Muscle Shoals will be used for the manufacture of "nitrates" from the atmosphere. By electrical methods, some of the nitrogen of the air can be combined with other substances, and thus "nitrates" made. Nitrates are needed in great quantities, particularly for use in fertilizers. The farmers of the southeastern states use more fertilizers than those of any other part of the country. Does this help you to see why Muscle Shoals is a good place for a nitrate plant? Moreover, power developed at Muscle Shoals can be used in many other kinds of factories. Some of it may be used in factories close at hand, and some in other places, for, as you learned in your study of the West (p. 66), electrical energy can be sent long distances from a power plant.

Another Part of the Central Mixed-Farming Region

The "blue grass country." — The picture in Figure 174 was taken in the part of Kentucky known as the "blue grass country." Tobacco is growing in the field nearest you. In Figure 175, you can see men harvesting hemp in another field in central Kentucky. In this part of the central

Figure 173

© Engineering View Company

Figure 174

By courtesy of the Burley Tobacco Growers Co-operative Association

mixed-farming region, you could drive past thousands of acres of corn, wheat, oats, hemp, alfalfa, clover, blue grass, and tobacco. In the pastures you could see not only cattle, sheep, and hogs, as you would expect, but also, in some of them, fine saddle and carriage horses, for which Kentucky has long been famous. The climate is such

© Keystone View Company

Figure 175

that much time can be spent pleasantly out of doors, and, as in the lands farther south, many of the better farm houses are built with spacious porches and are surrounded by groves of trees or large tree-dotted lawns.

Tobacco. — Throughout much of the part of the central mixed-farming region south of the Ohio River, tobacco is an important crop. Cigars and tobacco for smoking and chewing are made from the leaves of the tobacco plant. Tobacco is a crop which can be grown in many places, but the quality and flavor of the leaf differ greatly in different climates and on different kinds of soil in the same climate. This is one reason why tobacco is not raised so widely as are corn and wheat. To soils such as those in the blue grass country, "Burley" tobacco seems best suited. The leaf of this kind of tobacco is not used for cigars, but in the making of plug tobacco and of mixtures for pipes and cigarettes.

"Tobacco-land" work. — As you read the following account, decide which seems to require more work, raising an acre of tobacco or an acre of corn on a Tennessee or Kentucky farm.

The picture in Figure 174 was taken late in August, at the time of the tobacco harvest. Plants which have been cut, commonly are allowed to wilt before being taken from the field. If this were a moving picture instead of a still one, you might watch the harvesters cutting the plants, gathering up the wilted ones, and splitting the stems or stalks so the plants could be hung over laths. In the tobacco barn, the laths are hung on racks which are at different heights. In this way, the barn can be filled from top to bottom. A tobacco barn is built with several doors or openings along the sides. On bright days, air is allowed to move through the barn and help to "cure" the tobacco. On rainy days, the barn is closed so the tobacco will not be injured by the rain. The kind of tobacco raised in western Kentucky is commonly "fire-cured." This means that artificial heat is used in the barns in order to dry the leaves. Most of the Burley tobacco, however, is simply "air-cured." It takes a laborer about sixty-five hours to harvest an acre of tobacco, for there are some ten thousand plants to be cut from a single acre.

Tobacco seeds are so tiny that it is very difficult to scatter them well in a large field, and so they are planted in small seed beds. In a plot of ground in which there are about twelve square yards, enough plants for a one-acre field can be started. The soil of the seed bed should be carefully prepared. To make ready one containing twelve square yards requires about twenty hours of labor. In Kentucky and Tennessee, seeds commonly are planted in these beds in March. Great care should be taken to give the young plants the proper amount of water. In some cases, too, they need to be protected at times by a light covering of cloth which is stretched over the bed on short sticks.

About twenty-four hours of work are required to prepare an acre of ground for the young plants started in the seed beds. The plants should be handled carefully, and it is best to transplant them on cloudy days. This work is done about two months after planting. In this region, then, it usually is done in May. Machines which plant from two to six acres a day may be used. If the work is done by hand, it of course takes much longer.

A tobacco field must be cultivated from time to time to destroy weeds. After the plants are large, the ground sometimes is hoed by hand. About two months after the plants are set out in the field, their tops are cut off in order to increase the size of the leaves, to thicken them, and to make the crop ripen evenly. Some thirty days later the plants are ready to harvest. Cultivating and topping an acre of tobacco take, together, about ninety hours.

The curing of tobacco requires about six weeks. After the tobacco is cured, much work still is re-

By courtesy of the Burley Tobacco Growers Co-operative Association
Figure 176

quired in order to get it ready for market. The leaves are stripped from the stalks and made into bundles of from six to twelve leaves each, which are called "hands." Before the stripping is done, however, the barn is left open during damp weather long enough to let the leaves absorb a little moisture so that they will not break badly when handled. It takes a man about one hundred forty hours to strip the leaves from the plants grown on a single acre and to prepare them for market.

In Figure 176, you can see many piles of "hands" in a warehouse to which farmers have sent their tobacco for sale. In many towns of this part of the central mixed-farming region, there are similar tobacco warehouses.

After reading this account, do you see one reason why, even on "tobacco farms," there commonly are more acres of other crops than of tobacco? Many of the tobacco lands, like the cotton lands farther south, are farmed by tenants or "croppers."

Raising hemp. — The hemp crop of this part of the region is much less important than those of corn, wheat, hay, and tobacco. Hemp is grown for the fiber in the stalk, which is used chiefly in making rope and coarse cloth for sacking. In Kentucky it is planted late in April. It does not need to be cultivated. Early in the autumn it is cut, either by hand or by special machinery such as that shown in Figure 175. The stalks are spread out evenly on the ground and left there for about a week. They then are raked together, tied into bundles, and stood in shocks. Late in November or early in December, the stalks are again spread out on the ground, and are left exposed to the cold and rain for about two months in order to rot, or "ret," them. The retting makes it easier to separate the fibers from the remainder of the stalks. The separating may be done either by machinery or by "hand brakes."

Other glimpses of the region. — Your study of the agricultural maps mentioned on page 135 should have given you other "glimpses" of farming in the region. What are they? Not all parts of central Tennessee and of central and western Kentucky are as fertile as the blue grass lands, but the crops are much the same throughout this part of the central mixed-farming region. In the pastures of the fertile blue grass lands of central Tennessee, you would see many fine mules. Many of the mules raised there are sold for use on southern farms and plantations.

Travels in Kentucky and Tennessee. — Limestone underlies much of the Kentucky-Tennessee part of the central mixed-farming region, and it has helped to make the rich soils there. It helps also to account for the fact that in west-central Kentucky there are limestone caves. Underground water, by dissolving some of the limestone, has "eaten out" great caverns there. The most famous of them is called Mammoth Cave. Its great, pillared avenues and domed grottoes have somewhat the appearance of an ice palace with lovely icicles hanging from its ceilings, and it attracts many visitors.

In Figure 177, you can see another sight in western Kentucky which would interest you. Would you like to be a pupil in this schoolhouse "on stilts"? In Figure 157 find the rivers that form the northern and western boundaries of Kentucky, and two large tributaries of the Ohio which cross the

By courtesy of D. H. Davis

Figure 177

state. As you would expect, there is much land in the wide valleys of these four large rivers which is so low that it is flooded when the water in the rivers is high. In some places, the houses in the valleys are built on ridges or mounds, but where there are no such higher spots, many of them are set on posts. Barns are built in some cases with inclines leading to the second story, so that stock can be driven " upstairs " and kept there during high water. On some farms, you might see bridges between the houses and the barns.

At the mouth of the Tennessee River you could take a boat which runs upstream across Kentucky and Tennessee to northern Alabama. On its upstream trip, your boat probably would carry groceries, farm implements, hardware, and other manufactured articles for people living near the river. On its return trip, it might carry grain, stock, and tobacco from the valley farms. At times of low water it would carry less than at other times. Do you see why? At some of the landing places along the river, there are wharf boats, which rise and lower as the water becomes deeper or shallower. As your boat steamed up the river, you might pass towboats pulling barges loaded with railroad ties cut from timbered lands along the river, or perhaps with coal from the mines of western Kentucky (Fig. 171). You might also see floating " theaters " that go from place to place to help furnish amusement for people of the river towns. At times you would steam through low, swampy lands; at other times you would pass higher, cultivated lands; and again you would be near wooded bluffs, that rise steeply from the water's edge.

From what you already have learned about the part of the Tennessee River in Alabama, you should know one reason why your river boat would not go on upstream into eastern Tennessee. What is it? You might go on by rail, however, along a route which in many places follows the river valley. Along the upper part of the Tennessee, you would travel through an attractive country of valleys, hills, and woodlands.

On this trip, you would have gone from the mouth of the river, in the lowlands, along its winding course up into the southern highlands.

A Highland Mixed-Farming Region

The great " valley " in the southern highlands. — Find on the map in Figure 157 the Cumberland Plateau. Find Blue Ridge in Virginia, and the mountains of westernmost North Carolina. In the region of the Appalachians, between the plateau to the west and the mountains just mentioned to the east, there is a long belt of lower country extending northeast and southwest which, because it is in general lower than the land on either side, is called the " Appalachian Valley." The part of this great " trough " in Tennessee is called the Valley of East Tennessee, and the part in Virginia is called the Shenandoah Valley. The Appalachian Valley really is not a single valley at all. It consists in places of many northeast-southwest mountain ridges separated from one another by valleys. In other places it is a jumble of hills and valleys. There are farm lands in the valley bottoms and on the gentler slopes, and there are forests, pastures, and here and there small patches of tilled land on the higher hills and ridges. Figure 178 will give you a good

Figure 178 *By courtesy of the Southern Railway System*

idea of the landscape. Few places in the "valley" are out of sight of wooded hills, and from many of the higher points you could see to the westward the forested edge of the great plateau, and to the eastward the upper slopes of the forested mountains, half-hidden perhaps in the lovely blue haze which suggested the name of Blue Ridge. Travel "up and down" the "valley," that is, to the northeast or southwest, is in most sections made easy by good roads. On the other hand, travel "across" it is in many cases difficult, for in that direction the roads are fewer, poorer, and in many places steep. Why do you think the road shown in Figure 178 crosses the mountain ridge in the background near the left side of the picture? Most of the main cross-country roads are built through such gaps in the ridges. Find from the map in Figure 157 the general courses followed by the railroads of the region. Is this what you had expected?

How the farm lands of the "valley" are used. — If you were to travel through the Appalachian Valley, you would find more cultivated land in corn than in any other crop. Some of the corn is used as food by the people. On the farms that are far from railroad shipping points, much is used to fatten hogs and cattle which are to be "sold on the hoof." Along the railroads and some of the better wagon roads, much corn is shelled and marketed.

More and more land is being used for hay and forage crops. Much land is so steep that it is hard to keep the soil from washing away if the fields are tilled. Hay and forage crops require little tillage, and their tangled roots help to hold the soil on the hillsides. Some of them, for example alfalfa and sweet clover, can send their roots deep into the ground to get the moisture they need. The growing of the two hay crops mentioned also tends to increase the fertility of the soil. Many farmers use part of their land to grow wheat, though in general the yields which they obtain are not high. Some of the soils are not good for wheat, and when the grain is ripening the weather, especially toward the south, is

By courtesy of Wellington D. Jones

Figure 179

likely to be too moist and too warm for it.

A little cotton is grown as a "money crop" in the southern part of the Valley of East Tennessee, though the growing season there is almost too short for it. It must be planted early in order to mature, and if a spring is late and wet, many farmers grow some other crop in its place that year. Early frosts may greatly reduce the yield of cotton, and for the most part it is grown on the higher, better-drained fields, where it matures more rapidly than it would on the moist bottom lands, and where there is less danger of early frosts. Most of the cotton produced in the "valley" is grown in districts where the roads are poor. It may pay to haul cotton rather long distances over rough roads to a market when it would not pay to haul cheaper and bulkier crops, such as corn or hay. This district is of course outside of the "cotton belt," as Figure 111 will show you.

Here and there throughout the Appalachian Valley tobacco is grown on patches of fertile, well-drained soil, largely for home use. On the sides of many hills and ridges of the "valley" there are apple orchards, and in some districts great numbers of peach trees are being set out on the hillsides. Does what you have read about the "valley" help you to think of any reasons why hillsides are good places for such orchards? If so, what are they?

The raising of cattle is the most important live-stock industry. Toward the south, the pastures may be grazed nine or ten months a year, for grasses remain green through most of the rather mild winter season and an abundance of hay and other feed is grown. Mere sheds provide enough protection in the colder weather. As you should expect, there are more dairy cattle near the towns and near the railroads and the better country roads, and more beef cattle farther away from markets and highways. The farmers in some parts of the "valley" sell much poultry and many eggs. There is much well-drained, gravelly soil which helps to provide healthful conditions

Figure 180 *By courtesy of Wellington D. Jones*

for poultry. The hens lay well in the winter, when the prices of eggs are high in city markets, because the winters are mild and the hens have plenty of green food. Train loads of live poultry are shipped about once a week to New York City from the chief poultry market in eastern Tennessee. These poultry trains have right of way over all other trains except the fast passenger trains. Twice a year, too, before Thanksgiving and before Christmas, a train known as the " Turkey Special " is rushed from this Tennessee poultry market to New York. A man is sent with each car to feed and water the turkeys in it, some 1200 in number, and to see that they are weighed accurately at the end of the journey.

The higher highlands. — Did Figure 157 and what you already have read about the Cumberland Plateau and the mountains east of the Appalachian Valley lead you to " picture " to yourself the kinds of country shown in Figures 18, 179, 180, and 181? These mountainous lands are a maze of ridges and valleys. The ridges are covered for the most part to their very tops with forests, as the four pictures you have just looked at and the map in Figure 29 all suggest. Farms occupy the valleys, and cultivated bits of land dot the slopes. This " land of the sky," as the higher parts of the Appalachian highlands have been called, is so strikingly different in every way from the neighboring lowlands, that it has also been called " a country within a country." Some of the highlanders whose cabins are tucked away in the little valleys and " coves " of the rougher sections call all outsiders " foreigners." Few railroads have invaded the mountains, and in some districts, such as that shown in Figure 179, the bowlder-strewn beds of streams serve part of the time as roads. When the streams are high, nearly all travel must stop save that on foot or horseback along the winding forest trails. Many of the highlanders are shut off from almost all connection with the outside world.

Farming in the mountains. — Corn is the chief crop in the rougher parts of the highlands. It produces more food per acre than any other crop, serves to feed both people and stock, can be stored easily, and can be ground into meal as needed. The yields of corn and of other crops are largest on the bottoms of the larger valleys, where the soils may be enriched by the deposits of overflowing streams, and there all the usable land is likely to be cultivated. Notice, for example, how the bottom land shown in Figure 179 is used for corn to the very edge of the bowldery, dry stream bed. But many of the farmers are forced to grow corn on slopes

Figure 181

By courtesy of the United States Department of Agriculture

such as those in Figures 182 and 183. Some of them are too steep and too stony to be plowed.

On the rougher farms, little is grown in the way of cereals other than corn. A few oats commonly are raised, and a few acres may be used for hay or other forage. In some cases, a little broom corn is grown, and in many cases some tobacco for home use. Almost all farmers have gardens, in which beans, potatoes, onions, and perhaps pumpkins and a few other vegetables are grown. Some of the vegetables are prepared for winter use. Beans are dried in the pod, and pumpkins are sliced and spread out on the cabin roof to dry in the autumn sunshine. Wild fruits, especially blackberries, add in their season to the supply of food, and many farmers have a few apple trees and peach trees. In these more rugged districts, away from the railroads, it is useless for the farmer to grow what his family or stock cannot eat, for it would not pay to make the long, rough journey to the nearest market with any of the products of his land. In some of the less rugged sections, some wheat and rye are grown in addition to corn and oats, and on some of the high mountain plateaus more land is devoted to hay or other forage than to corn.

There is little good pasturage in most parts of the mountains, and stock wanders at will in the forests in search of food. Hogs are the most numerous animals, and together with chickens and geese they may be seen about almost every cabin. Hogs can get part of their own food from nuts and acorns, they furnish the cheapest source of meat, and they grow to usable size quickly. The geese are raised for their feathers. Many farmers keep a cow or two, but in most cases the milk is poor and thin. The keeping of

Figure 182 *By courtesy of Wellington D. Jones*

sheep is less common than in earlier years, partly because of trouble with sheep-killing dogs. A few are raised here and there for their wool. In the districts where the farms contain a larger fraction of tillable land, and where more hay and forage are raised and more land can be used for pasture, there are more beef cattle and sheep, but usually fewer hogs. Some of the cattle and sheep are sold each year to lowland farmers. In a few such districts milk cows are kept, instead, and cheese is made in little factories in which the farmers of the surrounding country own shares. Some of the conditions in the mountains are very favorable for this business. The summers are not very hot, and springs abound. On the other hand, many parts of the region are not suited to pasture grasses. Of what other lands do the grazing of milk cows in mountain pastures and the making of cheese remind you? (*Journeys in Distant Lands*, pp. 92, 114.)

Figure 183 *By courtesy of Wellington D. Jones*

Mountain homes. — Many of the houses in the mountains are like that shown in Figure 183. They are built of rough-hewn logs; the walls are chinked with clay, and are bare within, unless pasted over with newspapers; in some cases they are without windows and have only one or two cheerless rooms furnished with the barest necessities; and often they are poorly heated in cold weather from fireplaces which open into low, outside chimneys made of stones and mud. Such homes tell the story of mountain poverty. In the larger valleys and the less rugged districts, where there are better lands and better roads, the houses as a rule are more comfortable and have more conveniences. Especially near the few railroads, many of the newer homes are built of lumber instead of logs. Just behind the cabin in Figure 180 is a well-stocked vegetable garden, farther up the slope a few fruit trees and a field of corn, at the left a slope recently cleared for more corn, and behind all the dense forest which seems to shut this little mountain farm away from the rest of the world.

Mountain forests and streams. — From the map in Figure 128 (p. 106), compare the forests of the southern highlands with those of the western states. What do you find to be true? The southern highlands contain the greatest supply of *hardwood* timber in the United States. The steeper, rougher land there, which is unfit

Figure 184 *By courtesy of the United States Forest Service*

for farming, can best be used for growing timber. The higher lands shown in Figure 181 and the land shown in Figure 184 are of this sort. Such lands should be kept well wooded all the time, partly because, as you have learned (p. 70), mountain forests have a very important effect on the flow of streams. Some of the streams which flow from the southern highlands are used as highways in their lower parts on the plains, and many of them furnish water power. Much power is developed from these swift-flowing mountain streams now, and much more can be developed when it is needed. As in the West (p. 66), most of it is carried in the form of electric energy to the cities of the lowlands. The power plant in Figure 184 is in the mountains of northern Georgia. The steep slope in the background should have a thicker cover of trees.

The keeping of forests on these Appalachian Mountain slopes, many of which are worn badly by rains when the protecting vegetation is cut off or burned off, is so important that the United States government is buying land and establishing national forests there. You can see from Figure 63 (p. 59) where the present national forests in these mountains are. They are cared for just as are the older national forests of the West (pp. 70–71). As roads are built through these forests, they will be visited by more and more people from the lowlands who like to go to such wooded highlands as are shown in Figure 181 to enjoy the bracing air and the charming scenery. In a few places the beauty of the scenery already has led to the establishment of pleasure and health resorts, and more of them will be started as the national forests are opened up and so are used more and more as playgrounds. Do you see how these things will help the neighboring highland dwellers to better their condition? They will be able, for example, to sell vegetables to the visiting people, they can find work at times in the government forests, and the roads will help them to market their stock and farm products.

In some parts of the highlands there are logging camps operated by lumber companies where timber is being rapidly "mined." In other parts, the farmers cut some timber from their land in the autumn and winter and "snake" it to the nearest stream. In the spring, when the streams are swollen by heavy rains, their logs and railroad ties are floated out to the lowlands. Here and there along the railroads there are sawmills in the mountains themselves. Much of the better hardwood lumber is shipped to northern cities, where it is used for making furniture.

Mining in the highlands. — Find again in Figure 171 the producing coal districts of the southeastern states. Some of them, you see, are in the Cumberland Plateau, and it was chiefly to get out the coal that some of the railroads were built along the bottoms of winding valleys to the districts where high-

Figure 185 © Ewing Galloway

grade coal had been found. Figure 185 shows two coal mines, one above the other. The coal is hauled out of the mines on railroad tracks by little electric engines. It is then dumped into a "conveyer" which carries it through the long shed to the building over the railroad tracks, where it is tipped into the freight cars that carry it away. These are new mines of the most improved type. Such mines could be seen at various places in eastern Tennessee, eastern Kentucky, and West Virginia. Do you remember how in parts of the West running water has helped men to get gold (p. 40)? Do you see, then, how the work of running water has made it easy to get at the coal which is being mined at the place shown in Figure 185? This slope is part of the side of a valley. The stream which made the valley cut through the two nearly level beds of coal, and so men can dig straight back into the hillside, instead of having to sink a shaft to reach the coal. Do you also see, however, that the river in cutting its valley carried away much coal with other rock, which thus was lost to man? In some of these mining districts, towns have sprung up in recent years. Most of the miners have come to these towns from other mining districts.

In some parts of the highlands, oil and natural gas also have been found, as you can see from the map in Figure 43, and in those places, as you would expect, you could see scenes similar to those in Figures 41 and 139.

Mountain resources and lowland cities. — On the whole, the mountain people have not themselves profited much from the minerals, timber, and water power of their highland country. These resources are being used largely by companies from the outside, that have the necessary money to develop them. The coal, the wood, and the power all are carried out of the mountains as rapidly as produced, to more prosperous lowland communities.

Find, for example, Knoxville and Chattanooga on the map in Figure 157. These cities of the Appalachian Valley are busy manufacturing centers, which benefit greatly from the resources of the neighboring higher country. They get coal from near-by mines at the eastern edge of the Cumberland Plateau (Fig. 171). Most of their knitting mills and many of their other factories use electric power brought from streams which flow down from the mountains. Their furniture factories and other wood-using plants depend on hardwood timber from the highlands. In Figure 186 you can see part of Knoxville, and from the higher hills in the background you could look over river and valley to the mountains with which the business life of the city is so closely connected.

In the highlands of the southeastern states, then, there are varied resources which man is using. However, both in the higher highlands and in the valleys, mixed farming

© Thompson Brothers

Figure 186

is the most widespread work. You should think of this area, therefore, as part of a highland mixed-farming region.

The Florida Fruit and Vegetable Region

Wet lands and drained lands. — In passing from the rougher parts of the highland region to Florida, you go to a *lowland* region which is like the uplands in that it, too, supports few people for its size. The picture in Figure 187 helps you to understand this. This picture was taken in a part of southern Florida called the Everglades. Thousands of acres there are treeless marsh such as you see in Figure 187. Here and there around the edges of the marsh land there are scattered clumps of myrtle and cypress, and to the west of the "glades" there is a vast cypress swamp. Interesting as this kind of country is to *see*, it cannot, of course, be used for farming until it is drained. Between the Everglades and the Atlantic Coast, there is a narrow strip of somewhat higher land, and some of the marsh lands near that border are being reclaimed. In Figure 188, you see one of the drainage ditches that have been dug there, and land from which the water has been drained. The picture in Figure 189, which was taken not far from the drainage canal shown in Figure 188, shows a reclaimed field planted in pineapples. Probably much of Florida's vast area of wet land, however, will remain unused for years.

South of the cotton belt. — In northernmost Florida there are farm lands much like those of the southern mixed-farming region, and there, as you learned from the map in Figure 111, some land is used for cotton. In much of Florida, September and October are the rainiest months of the year. What have you learned which helps you to understand why such places are not good ones in which to grow cotton? In many places, sandy soils, as well as heavy autumn rainfall, are unsuited to cotton. On the other hand, some of these soils are excellent for the growing of vegetables.

Truck farming. — Florida truck farmers grow many more vegetables than are used

Figure 187 © Brown Brothers

Figure 188 © Ewing Galloway

Figure 189 © Ewing Galloway

in near-by cities, and ship them to markets hundreds of miles away. The map in Figure 95 helps you to explain this. Can Florida vegetables be planted earlier than those in states farther north, or not so early? Why? In fact, many of the vegetables which are shipped north from Florida are *winter-grown.* Tell why the people of northern states are eager to get fresh vegetables at this season. In Figures 190 and 191, you can see two fields of winter vegetables near the east coast of the peninsula. In a recent year, more than a million dollars' worth of each of eight kinds of vegetables were grown in Florida. The crop of early Irish potatoes

By courtesy of the Southern Railway System

Figure 190

By courtesy of the Southern Railway System

Figure 191

was worth more than five million dollars; the crop of winter tomatoes more than four million; sweet potatoes, a summer crop, more than three million; celery, more than two million; and crops of lettuce, cucumbers, cabbages, and beans each were worth between one and two million dollars. Besides these, many other vegetables were produced in smaller amounts. All together, the vegetables were worth almost a third as much as all the crops produced in Florida. From the map in Figure 159, you can tell in what parts of Florida most vegetables are raised.

Florida fruit. — Almost as valuable as the Florida vegetables in the year referred to was the fruit produced in the state. Of the *small* fruits grown, strawberries, picked between the first of December and the first of March, are most important. Their value, however, is very small in comparison with that of oranges. The orange crop, in the year referred to above, was worth more than any other Florida farm crop. Notice, on the map in Figure 160, the many dots in a belt which extends from southwest to northeast across the central part of the peninsula. Nearly all the dots in this " fruit belt " stand for acres of orange orchards. The belt seems light when you compare it on this map with the fruit lands of California, but when you remember that each dot stands for a thousand acres, you realize that orange growing is a very important business in Florida. The orchard shown in Figure 192 is near Tampa (Fig. 157), on the west coast.

The fact that oranges grow well in Florida shows you that some kinds of oranges grow in a land whose climate is not like that of Mediterranean lands, for while the winters in Florida are cool and rainy, the summers, although hot, are not dry. This difference in climate is one fact which helps to explain why Florida and California oranges are different.

Other farming. — Of course not all Florida farms are fruit or vegetable farms. More acres of land there are used for corn than for

Figure 192 © Ewing Galloway

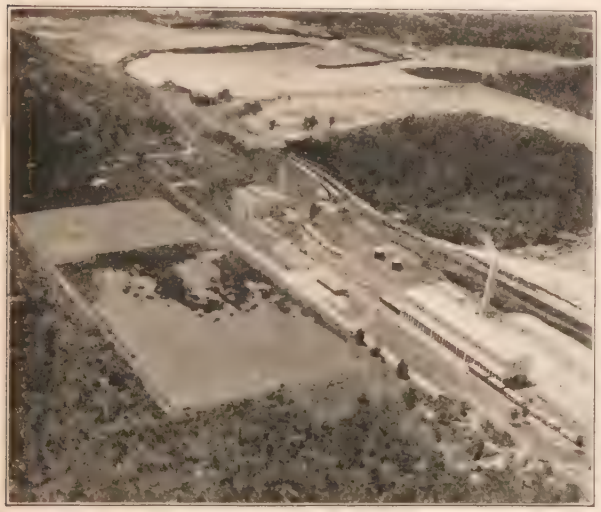


Figure 193 *By courtesy of the Armour Fertilizer Works*

any other crop. The value, however, of the vegetables grown on an acre is much greater than the value of the corn that could be grown on it. Some tobacco is grown, too. Because of the difference in climate, the kind of tobacco raised there differs from that in Kentucky. Some of the leaves of Florida tobacco are used for cigar wrappers. Besides corn, other crops such as hay and peanuts are raised to feed to stock. As you can see from Figures 106 and 107, many beef cattle and hogs are raised in Florida. Some of the stock find food *the year round* in woodland pastures, for woodlands make up more than half the land which is in farms, and the pastures are green throughout the winter.

Forest work and mining. — As you would expect, there also is much woodland in Florida which is not in farms, and both lumber and turpentine are produced in large amounts. In fact, more turpentine comes from Florida than from any other state. In the central and northern parts of the state, there also are mines different from any you yet have visited. You might have seen similar ones in Tennessee, but those in Florida are the greatest producers. These are phosphate mines. Phosphate rock is of great value as a fertilizer. In Figure 193, you can see a phosphate mine or plant as it looks from an airplane. Some of the pits from which phosphate has been dug are now filled with water. The largest building is a concrete storage bin for dry rock. Cars can be run under the storage bin to be filled. The next largest building is a power house, from which power for the mining, washing, and hoisting machinery is supplied.

A winter playground. — Does not what you have learned about Florida's forests, swamps, and marshes help you to explain why few people as yet live there in propor-

By courtesy of Edith Shepard

Figure 194

© Ewing Galloway

Figure 195

tion to the size of the state? You would, however, find many more people in Florida during one part of the year than at other times. Do you know why? At what time of year would you choose to visit Florida? Why? Many other people choose, as you probably did, to go there in the winter. The pleasant weather, the opportunities for varied sports of land and sea, and the interesting scenery, all help to make Florida a winter playground for tourists. Does not the moss hanging from the pine trees shown in Figure 194 give a rather tropical appearance to this scene? Many of the trees in front of the hotel in Figure 195 are palm trees.

One of the more interesting railroad trips in America is that to the southernmost tip of Florida. Find on the map in Figure 157 the railroad which follows the eastern coast of the peninsula. Notice that it does not end at the southern shore of the mainland. Can you find the string of islands along which it is built from there southwestward? From mainland to a "key" or island, and from key to key, long bridges span the straits in order to carry the road "across the seas." Can you imagine yourself on a train as it crosses a seven-mile bridge — the Atlantic to the east, the waters of the Gulf to the west, and ahead the palm-bordered coast of yet another island? At the end of the railroad journey you would reach Key West, the southernmost town in the United States, and there find yourself at the very edge of the tropics. Yet, if after you had enjoyed its sunshine, palms, and smiling sea, you chose to journey to the north again, you could, by a ride of somewhat less than sixty hours, reach the city of New York.

From Florida to Delmarvia

"**Following the vegetables.**" — If you did not care to journey northward quickly, you could follow vegetable harvests up the eastern coast, stopping from time to time in the more important trucking districts that border the Atlantic. The date on which you would start, and the time you would take for such a journey, would depend upon the particular vegetable you chose to follow.

"**Cabbage and potato journeys.**" — As you read the following paragraphs, decide whether you would rather make a "cabbage" or a "potato" trip along the Atlantic Coast of Southeastern United States, and be ready to tell why.

In southern Florida some cabbages are ready for market by the middle of December, and from time to time during the next five months they are shipped out by the carload. Leaving Florida about the middle of February, you would reach Savannah, Georgia (Fig. 157), at the time when Georgia cabbages are beginning to come into the market. You would find, however, that cabbages in this district are not so important as some other vegetables. As you traveled about in the truck lands there, you would see that most

Figure 196 *By courtesy of the United States Department of Agriculture*

Figure 197 *By courtesy of the United States Department of Agriculture*

of them are used for early Irish potatoes and much of the remainder for beans and peas. These crops are not ready for market there until spring.

By spending a month in Savannah before going on to Charleston, South Carolina (Fig. 157), you would arrive in Charleston at the close of the first cabbage-shipping season there, and would find a second crop of cabbages old enough to be marketed within a few weeks. During the winter and spring months, millions of cabbages are shipped each year from Charleston. Almost as much land in this district is used for cabbages as for Irish potatoes. Figure 196 shows women at work in a lettuce field near Charleston.

Figure 198 *By courtesy of the United States Department of Agriculture*

At the time of your visit, you might see just such a scene, for the picking of lettuce begins there about the middle of March. You might also at this season see other fields such as those in Figures 197 and 198. These pictures were both taken in truck lands north of Charleston. Figure 197 shows a field of early Irish potatoes. Later, just before the potatoes are harvested, cotton will be planted between the rows. In the field in Figure 198, strawberries are growing. The strawberries you would see at the time of your visit probably would not be ready for picking for a month. Besides the crops already mentioned, you might see hundreds of acres used for beans, peas, asparagus, cucumbers, and other vegetables.

On the map in Figure 157, find Wilmington, North Carolina. You should be in the district near this city by the middle of April in order to see the beginning of the cabbage harvest there. At that time, too, lettuce is ready to be picked, and the early potato crop will be ripe in about a month.

You would need to reach Portsmouth, Virginia (Fig. 157), by the middle of May in order to see the beginning of the cabbage harvest there. At that time people near Norfolk and Portsmouth would be shipping out asparagus and part of their third crop of lettuce. Their early strawberries would also be ripe, and some early Irish potatoes would be almost ready to dig.

You should plan your "cabbage trip" so as to reach New Jersey by the middle of June, and from there you might go on at once to New York City. About how long, then, would a "cabbage journey" from southern Florida to New York take?

If you made, instead, a "potato journey," you would plan to be in southern Florida late in March, near Jacksonville, Florida, in early April, near Savannah in late April, at Charleston by the middle of May, at Wilmington in late May, and in Portsmouth or Norfolk early in June.

Seaport truck districts. — Did you notice that in the coastal strip between Florida and Virginia the more important trucking districts in each state are those near important seaports? There are several reasons why this is true. (1) Some of the truck is grown, as in the case of almost every city district, in order to supply the needs of the people of the seaports themselves. (2) If fresh vegetables are to be sent long distances to market, they must be sent quickly in order to arrive in good condition. Important seaports are in most cases railroad centers, too. There are good railroad routes from these districts to northern markets, while branch lines from the main routes lead to various parts of the districts. The value of land for raising truck depends much upon its distance from a railroad shipping point. (3) From the seaport shipping centers, some vegetables that do not spoil readily can be sent by boat. (4) These coastal lands are not only nearly flat, but also low. Most of them are only a few feet above sea level. As you have learned, water heats and cools more slowly than land, and in these low lands near the sea, there is little danger of late spring and early autumn frosts. The growing season is somewhat longer there than in the higher, inland parts of the southeastern states. (5) It happens, too, that some of the rather sandy soils of these coastal districts are especially suited to the growing of vegetables. When you consider all of these things, you will not be surprised that thousands of carloads of vegetables are shipped each year from lands near the more important Atlantic ports of the southern states.

In the Delmarvia Mixed-Farming Region

Crops of many kinds. — The coastal truck lands between Florida and Virginia are in the "cotton belt," or southern mixed-farming region. Those of Virginia, on the other hand, are parts of the Delmarvia mixed-farming region. There is no single crop which, in the region as a whole, is so important as corn is in the central mixed-farming region, rice and sugar in the coastal mixed-farming region, cotton in the southern mixed-farming region, and wheat in the northern mixed-farming region. In some counties, Irish potatoes and sweet potatoes are of great importance; in some counties, other vegetables; in some, apples; in others, tobacco; in still others, peanuts; and in all of them, corn, wheat, and hay. In a "spotty" way, then, farming in this region is more mixed than it is in any others you have visited. The region is somewhat like the Florida region in that much land is used for truck farms and fruit farms.

In the peanut fields. — In Figure 199, you see a peanut field after harvest. Peanuts grow on vines somewhat like those of peas or sweet peas, and are usually harvested in September or October. Just as in the case of Spanish peanuts, however, the seed pods, or "nuts," are formed underground. The vines should be dug before frost. A common method in harvesting peanuts is to drive a plow close to a row of vines so that the "plow share" will run under the roots of the plants and loosen the soil. Then the plants are pulled by hand, and are stacked in the fields to dry. You can find several stacks in Figure 199. In many cases, the stacks are built around poles about five feet high which are set in the ground. To help

Figure 199 *By courtesy of the United States Department of Agriculture*

protect the nuts from rain, the plants are stacked with the roots and nuts toward the center and the vines at the outside, and the stacks are covered with grass or hay. You see, then, that the harvesters do some things as they do because of the kind of weather they are likely to have during harvest time. When the stacked plants are dry enough, the peanuts are picked from the vines either by hand or by machinery. As you see in Figure 199, women and children help with this work.

Virginia peanuts are larger than those grown as a forage crop in the southern states. Most of the peanuts sold as nuts to eat come from Virginia fields. Some of the Virginia peanuts, too, as well as some Spanish peanuts, are used in the making of peanut butter and peanut oil. In Virginia, peanuts commonly are planted in May. About how long, then, does it take to raise a crop of peanuts in this part of the United States?

In the "land beyond the water." — You might go by train from the north into the part of Virginia in the southern tip of the Delmarvia Peninsula. In this district you would pass through little towns whose quaint, home-like old houses and well-shaded streets tell the story of great age, as compared with that of most towns in the United States. The land is low and sandy, and only about eight miles in average width. Here and there are sand dunes, on which the sand is blown about, now by breezes from the Atlantic, and again by those from Chesapeake Bay. Pine trees add charm to the landscape. Amidst the woodlands and pastures, there are many fields, such as that in Figure 200, which would tell you that you were in a "potato" land. The picture of the sweet potato field in Figure 200 was taken in the Virginia coast lands *west* of

Figure 200 *By courtesy of the United States Bureau of Soils*

Figure 201 *By courtesy of the United States Bureau of Soils*

the Chesapeake, where much land also is used for truck farming.

A trip up James River. — If you were visiting Virginia, you might next travel along the James River from the seashore to the mountains. Find the river on the map in Figure 157, and trace its course from the sea to the mountains. Near the mouth of the river you could look from the deck of the steamer across low-lying lands, fringed in places with marsh grasses. In the nearly level lands that stretch away from the valley sides, you could find many pastures, truck farms, and fields of corn, wheat, and peanuts. Your boat would take you up the winding river, past islands, woodlands, plantations, farms, and interesting old towns, to Richmond (Fig. 157), at the lower falls of the river. Here the river narrows between cliffs that add to the beauty of the scenery. The *piedmont* lands, as those lying " at the foot of the mountains " and between them and the coastal lowlands are called, are more rolling than are the lands near the Chesapeake. Figure 201 is a view in the North Carolina piedmont. Notice the walls and " terraces " which help to prevent the soil from being washed down the stump-dotted slope. What earlier work was done on this land which made it *easier* for the soil to be washed down the slope? Much of the piedmont land to the north of the James River is used for corn, other grain crops, hay, and pasture. In the rougher foothill lands, you would find many apple orchards. In the Virginia piedmont lands to the south of the James, the value of the tobacco produced is greater than that of the corn. Many tobacco plantations extend to the river's edge.

At the western edge of the piedmont the narrowing James leads you past beautiful falls, through a gap in Blue Ridge, and on into the Natural Bridge National Forest. Springs dot the district, the air is refreshing, and trails lead to the very summits of Blue Ridge. You are now west of the mountain wall, in the farmlands of the Shenandoah Valley.

Some Cities of the Southeast

The city at the falls of the Ohio. — Find Louisville again on the map in Figure 157. Notice the railroads that extend north from the city, and those that spread out like an open fan toward the south. Perhaps the railroads on this map will help you to understand why Louisville sometimes is called " The Gateway City to the South." Find the place of the city on the map in Figure 110. How does this map and what you have read about the blue grass country help you to understand why Louisville is a great leaf-tobacco market? Why it manufactures large quantities of chewing and smoking tobacco? The value of the tobacco manufactured there is greater than that of any of the other products of the city's factories and mills. The city has a large trade also in

Figure 202 © Ewing Galloway

many other things, among them pork, wheat, corn, coal, and lumber. What have you already learned which helps you to explain its trade in the things named?

Most of Louisville stands on a small plain, which is nearly surrounded by hills, opposite the "Falls of the Ohio." These "falls" really are rapids, caused by a ledge of rock across the bed of the river. In earlier days, when the Ohio River was a busy highway for boats, vast quantities of goods were unloaded, carried past the rapids, and reloaded, especially when the water in the river was low. For many years the business life of Louisville, like that of St. Louis (p. 123), centered in its river trade. It was a "bulk-breaking point" for much river traffic and the shipping and receiving center for the rich farm lands of the near-by blue grass country. A government canal, part of which you can see in Figure 202, now permits loaded boats to pass even at low stages of the river, but the business of carrying the freight of the Ohio Valley long since passed largely to the railroads. Comparatively few boats, accordingly, now pass Louisville.

Figure 203 is an airplane view of part of Louisville. The wholesale district of the city, with its great tobacco warehouses, is near the river. Farther back is the principal retail district, and still farther from the river is the older residence section, where long lines of brick dwellings border streets shaded by splendid maples, oaks, and other trees. Many of the newer houses are in the outskirts

Figure 203 © Canfield and Shook

of the city, on the circling hills, parts of which also are used for parks.

The larger cities of Tennessee. — Find Memphis again on the map in Figure 157, and notice particularly the railroads that connect it with the surrounding country. Memphis is the only place south of St. Louis at which bridges have been built across the mighty Mississippi. Two bridges cross the river there, one of which you can see in Figure 162. Because of its railroads, the river highway, and the bridges, Memphis is tied in a business way as closely to northern Mississippi and eastern Arkansas as it is to western Tennessee. You already have read about Memphis as a cotton market (p. 137). Does not the fact that it ships great quantities of cotton lead you to think that it probably also manufactures large quantities of cottonseed oil and cake? It is, in fact, the leading city in the country in the manufacture of cottonseed products. Find the place of Memphis on Figures 29 and 128. Although most of the timber in the South is softwood timber, there also is much hardwood timber within easy reach of Memphis. As you might expect, there are many sawmills in and near the city. Memphis is a great hardwood lumber market,

and has various kinds of wood-working plants in which furniture, flooring, barrels, boxes, and other things are made. Many automobile wheels are made there from hickory, and many boat oars from ash. Do you see, then, how the most important two groups of manufactures in Memphis depend on the near-by cotton fields and forests? But as the farmers of the neighboring country have depended in recent years less on cotton, and have grown more kinds of crops, so the industries of Memphis have become more varied. The city, like the surrounding countryside, does not depend on cotton to the extent that it once did.

Find Nashville again on the map in Figure 157, and notice on what river it is located. Nashville is the business center of middle Tennessee. All the railroads and all the important highways of the district lead to Nashville. Like Louisville and St. Louis, Nashville long depended largely on river trade. As you can see from Figure 157, the city is at the southernmost point of the great bend, or series of bends, in the Cumberland River. It was, accordingly, the nearest river town for a large farming district to the south of the river. Since business centered at Nashville in the days of river trade, the road system of central Tennessee naturally focused on the city. Later, when railroads were built, they followed the established lines of trade. Nashville is chiefly a wholesale center for the distribution of groceries, provisions, dry goods, and other things collected there, especially to the villages and farm lands of central Tennessee, southern Kentucky, and northern Alabama. Its markets in these sections have helped the city to develop various manufactures. There are flour mills, for example, which manufacture soft wheat flour, in demand for making hot breads. There are wood-using industries, whose supply of hardwood comes in part from the rougher lands of middle Tennessee and from the forests of the Cumberland Plateau. There are fertilizer plants, part of whose material is obtained from phosphate mines southwest of the city and whose chief markets are in the cotton belt and in the tobacco districts of Kentucky and Tennessee.

Do you think that Nashville is more conveniently located than any of the other Tennessee cities shown in Figure 157 to be the state capital, or less so than one or more of the others? Why?

An "iron and steel city." — Find Birmingham again on the map in Figure 157. You already have learned that Birmingham is the iron and steel city of the South. In addition to the great blast furnaces and steel mills, there are, in and near the city, many factories in which iron and steel products are made. These products range in size from nails to huge steel bridges.

It is a trip of only two miles from the center of Birmingham to "Red Mountain," in the range of iron-ore hills. From high on the "mountain," you could look down on the city as from an airplane. Beyond are the hills that rim the valley on the opposite side. Broad streets, modern business buildings, and shaded residence districts are spread out beneath you as on a map, but most striking of all the man-made parts of the landscape are the steel mills upon which so much of the work of the city depends. Try to imagine standing on Red Mountain in the evening and watching the sky above the city brighten with the red glare from huge furnaces in which ore from the very hill on which you stand is being used in making steel.

A railroad center in the Georgia piedmont. — Find Atlanta again on the map in Figure 157. Notice particularly its position with reference to the Appalachian Highlands, and also the lines followed by the railroads that enter it. For many miles northeast of Atlanta there is no easy route by which railroads can cross the mountains. Do you see, then, one reason why railroads of the piedmont country and the Appalachian Valley meet at

Atlanta? Did you notice, too, that several railroads from Atlantic and Gulf ports focus on this city near the southern end of the mountains? The growing business, manufactures, and population of Atlanta, all depend quite largely on its railroads. What special kind of work does your map show you is done in Atlanta? Do you think the railroads help to make it a good place in which to do this work? Why?

Find the place of Atlanta on the maps in Figures 29, 42, 111, and 171. As these maps show you, Atlanta is near supplies of cotton, timber, iron, and coal. From the near-by Chattahoochee River (Fig. 157), Atlanta gets electric power, as well as its water supply.

From reading and thinking about the preceding paragraphs, what kinds of business and of manufacturing would you expect to find in the city? Atlanta is an important market for cotton and for mules. It has cottonseed oil and cake mills and mills in which cotton cloth and cotton goods are made. It has factories in which many things are made of wood and of iron or steel. Large quantities of fertilizers are made there. Did you think of all these things? If not, were mules and fertilizers the ones you failed to think of? Why is Atlanta a good place in which to buy and sell mules and fertilizers?

Atlanta is an attractive residence city. It is in the rolling lands of the piedmont, at a height of about a thousand feet above the sea. Its elevation helps to temper the heat of the southern summer.

The city at the falls of the James. — If you really were to follow James River from sea to mountains (p. 162), you doubtless would want to stop at Richmond, the capital and largest city of Virginia. In its tall office buildings, its noisy business streets, and its smoky factories you would find the familiar signs of a modern commercial and manufacturing city. But you also could find quiet, tree-bordered streets, lined with fine old houses of brick set back in shaded lawns, which seem to tell of an older, less active city. And scattered here and there you could see monuments and buildings mellow with age which recall a distant past, for one of the older settlements of the country was built on the wooded hills at the falls of the James. Since early colonial days, Richmond has been a place of importance. In the Old Market district of the city, you could in summer see colored farmers offering flowers, watermelons, corn, sweet potatoes, and other things for sale which they had brought to town in queer, two-wheeled, canvas-covered carts drawn by mules. In the same section of the city you could see the tobacco warehouses and factories upon which for many years much of the prosperity of Richmond has depended. Here thousands of men and women, both white and colored, earn their living by making tobacco, cigars, and cigarettes. As you visited these factories, you doubtless would think of the near-by counties in which tobacco is a leading crop (p. 160).

The larger seaports of the Southeast. — Chesapeake Bay may be thought of as a great, open gate leading to the ocean highway, and on its shores or the banks of its tributary rivers there are several important seaports. South of the Chesapeake "gateway," much of the coast has no good harbors where the traffic of land and sea could meet and where cities might grow up. Find Pamlico and Albemarle sounds on the map in Figure 157, and notice the long, narrow islands which separate them from the ocean. Similar islands hug the coast for long distances. The "inlets" between these islands are in most cases shallow, as are the "lagoons" between the islands and the mainland. In general it was only where some river comes to the sea that ships could load and unload, and so all the larger seaports of the Southeast are really also river ports. Find these seaports on the map in Figure 157, and notice the rivers on which they are located. Even the rivers did not furnish satisfactory harbors

By courtesy of the United States Army Air Service

Figure 204

for modern ships, and large sums have been spent in improving them and the channels leading to them from the sea.

What you already have learned about the southeastern states should make it possible for you to give one or more reasons for each of the following facts about freight received or shipped by boat at some of these ports of the southeastern states. What reasons can you give? (1) The Atlantic ports receive large quantities of fertilizer materials. (2) Tampa ships much phosphate rock. (3) Petroleum products are brought by ship to all of these ports. (4) Mobile, Savannah, Charleston, and Wilmington ship much cotton. Jacksonville and Tampa, on the other hand, ship little or no cotton. (5) All of the ports ship lumber. (6) Rosin and turpentine are shipped from Savannah, Jacksonville, Tampa, and Mobile. (7) The Virginia ports ship large quantities of leaf tobacco. (8) Norfolk and Newport News are very important coal-shipping ports. Charleston and Mobile also ship some coal. (You will be helped in thinking about this by noticing the railroads [Fig. 157] that connect these ports with coal-producing districts [Fig. 171]). (9) All of these ports receive by boat larger or smaller quantities of dry goods, groceries, and hardware.

Most of the seaports do little manufacturing. The manufacturing centers of Southeastern United States are for the most part inland cities, which are nearer the mines, forests, or fields from which the raw materials for use in factories are obtained, and which in some cases are near abundant water power. At Newport News, however, and at Mobile,

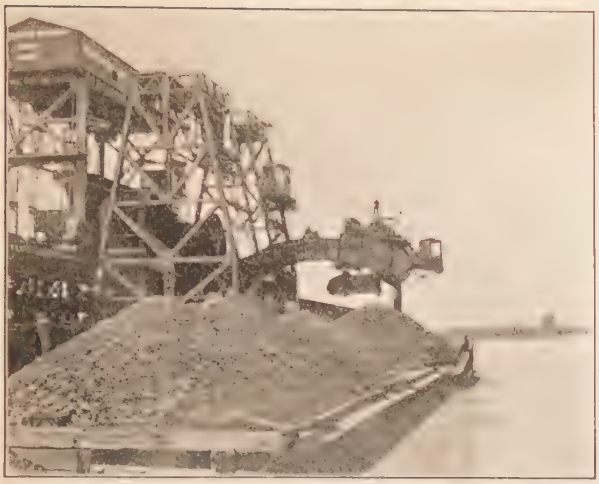


Figure 205 © Ewing Galloway

thousands of men make their living in plants where steel ships are built. What steel-manufacturing city, from which much of the material needed by such shipbuilders could be obtained, is comparatively near to Mobile? At Jacksonville, "the railroad gateway to Florida," near forests where much logging is carried on, many small wooden boats are made. Do you see any reasons why large numbers of such boats are sold in Florida? If so, what are they? At Tampa, millions of dollars' worth of cigars are made each year. Most of the tobacco used in the Tampa factories is brought from the island of Cuba (Fig. 17), and many of the workers in the cigar factories came from Cuba, too. At Charleston and at Savannah, some of the fertilizer materials brought by ships are made into fertilizers which are ready to be sold to farmers.

Figure 204 is an airplane view of the harbor of Mobile and of part of the city. What things can you see in the foreground which illustrate some of the statements about the trade of Mobile that were made in a preceding paragraph? Figure 205 shows part of a coal pier at Charleston. The coal you see in the picture had been brought by railroad from mines in eastern Tennessee, and later was shipped to Europe. In Figure 206, you see the water front of Newport News, at the mouth of the James River. Nearest you is a high coal pier. The coal drops through chutes to ships alongside the pier. Beyond the second high pier there are low warehouses for leaf tobacco and for general merchandise, and still farther away is a shipbuilding plant. There is a tall building in the right-hand foreground which shows you that something is handled here that was not mentioned in connection with the trade of Newport News. What is it?

Exercises and Games

Exercise I. — 1. By following the directions for reading, page 136, what striking differences did you find between the work regions of the southeastern states? What reasons can you give for these differences?

2. Make for each of the southeastern states a list of the important things which the name of that state now suggests to you.

3. What new facts about the West or the Western Interior did you learn from the maps in Figures 159, 160, and 171?

4. Do you not think that, since so much fruit and so many vegetables are grown in Florida, a good name for the region is the "Florida fruit and vegetable region"? In order to print this name in Florida on your outline map, you may have to use abbreviations.

Do not print till later, in the region you numbered "6" on your map, the name "highland mixed-farming region," for it extends north of the Ohio and Potomac.

5. Put on your outline map signs which will stand for the largest seven cities of the Southeast. Do not print their names on the map, but be sure you can name them all. Tell what each of these city names *first* suggests to you.

Exercise II: A newspaper clipping. — The following sentences were taken from an article in a city newspaper of December 9. As you read them, find in what ways man's work was hindered by the weather in some parts of the United States at that time.

"Severe storms are raging in Iowa, the Dakotas, and the Rocky Mountain states. In Sioux City, Iowa, there have been eighteen inches of snow, and it still was snowing last night. Public schools were closed because the children could not plough through the drifts. Trains were late, and wire communications were hampered throughout the entire North-

Figure 206

By courtesy of the United States Army Air Service

west. The mercury dropped below zero in North Dakota and Wyoming.

"Heavy rains are working considerable damage in Mississippi, Kentucky, and Tennessee. Heavy losses were reported from Nashville and Memphis. Bridges were swept away by floods in some of the country districts. Three negro tenants on a plantation near Bolton, Mississippi, were killed when their house was blown down."

How many of the places mentioned in this article have you learned about already? Find Sioux City on the map in Figure 321, and Bolton on that in Figure 323. Figures 320–323 are "reference maps" on which you can find the names of many smaller cities and towns. Be sure to use such a map when you want to find the locations of places about which you read in other books, in magazines, or in newspapers.

What have you learned about the states mentioned in the newspaper clipping that helps you to explain the difference between the nature of the storm in the states mentioned in the first paragraph and in those mentioned in the second paragraph?

Facts to explain. — 1. In the heart of the business district of Enterprise, Alabama, stands a bronze fountain on which there is the following inscription: "In Profound Appreciation of the Boll Weevil and What It Has Done as the Herald of Prosperity, This Monument Is Erected." What have you learned about the southern mixed-farming region that helps you to explain what the inscription means?

2. What have you learned about Florida that helps you to explain the following facts? (1) Some tomatoes and celery from northern states are marketed in the summer in Florida. (2) During early winter, people in Florida use potatoes from northern states. (3) Some men in Florida make their living as expert packers of fruits and vegetables which are to be shipped long distances.

For your notebook. — *A lumber graph:* Make drawings of three boards or planks, each one-half inch wide and six inches long. Let each one of these stand for a little more than *ten billion feet* of lumber. Together they will then stand for about the amount of lumber that was cut in the

United States in a recent year. Make one of the planks the same color that you made the southeastern states on your outline map of the United States. This will show that about one-third of the lumber cut that year in the entire country came from the southeastern states. Keep the graph in your notebook.

A cotton graph: Make in your notebook small, simple drawings of thirteen bales of cotton. Let each bale stand for *one million bales*. Together, these bales will stand for nearly all the cotton produced in the United States in a recent year. Make underneath these bales on the same page of your notebook the drawing of a building that suggests a cotton-cloth mill somewhat like the one shown in Figure 158. Let this stand for all the cotton-cloth mills in the southern states. Draw lines from three of the bales to the mill. This will show that about three million bales of cotton were used that year in the southern cloth mills. North Carolina mills used almost a million, while South Carolina and Georgia mills together used more than a million. More than two-thirds of the cotton used in southern mills, then, was used in these three states. The ten million bales not used in southern mills were either kept in storage in warehouses or shipped to other parts of the United States or to foreign lands. Keep this graph in your notebook.

Mapping your "potato journey." From the outline map in Figure 324, make an outline map of the southeastern states. Put on it signs for the ports at which you stopped on your "potato journey." At the side of each sign write the name of the month in which the potato harvest begins in that district. Keep this in your notebook.

A summary paragraph. — Fill the blanks in the following sentences, and copy the paragraph in your notebook. Give it a good title.

"In all the southeastern states there are forests, and many people work at l——. M——, most of A—— and G——, S—— C——, westernmost T——, and eastern N—— C——, are in the s—— m—— f—— r——. C—— is the most important farm crop of the region, although many other crops are raised. A long growing season and rainfall well distributed throughout the growing season, but not heavy in the autumn, help to account for this fact. In the F—— f—— and v—— region, the growing season is even longer than in the southern mixed-farming region. The rainfall is heavy, and the winters are so mild that winter v—— and semi-tropical f—— can be raised there. Eastern V—— and north-central N—— C—— are in the southern part of the D—— m—— f—— region. In addition to wheat, hay, and corn, large quantities of p——, many v——, and much t—— are grown there. Soils in many parts of central T—— and of central and western K——, in the c—— m—— f—— region, also are well suited for t——, and it is an important crop in this part of the region. This part is famous, too, for its fine h—— and m——. In the h—— m—— f—— region in W—— V——, eastern K——, eastern T——, northeastern A——, northernmost G——, western N—— C——, and western V——, many valley lands are used for farms, but the rougher, higher lands are mostly in forests. Much of the work in the cities of Southeastern United States depends on the products of its farms, pastures, forests, and mines."

Puzzles and games. — 1. If you name the following fruits and vegetables correctly, the initials of the names will spell a word which tells *near what* most of the more important truck districts of Southeastern United States are located.

(1) A vegetable shipped north from several southern ports.

(2) Florida's most important fruit.

(3) Virginia's most important fruit.

(4) A small fruit shipped from many southern truck districts.

(5) A very important winter vegetable shipped from Florida.

2. *An automobile journey puzzle:* An automobile could start in any one of the ten southeastern states and go through all the others without going twice into any state. Start a list with the name of one state, and name the others in the order in which the car could pass through them on such a journey. Make other such lists, starting them in turn with each of the other states. You might make an "automobile race" of this puzzle by seeing which pupil can make a correct list first.

3. *An "F" puzzle:* The following three words beginning with "f" should suggest to you one of the regions of Southeastern United States: fertilizer, fruit, fun. What region do they suggest to you? The answer should show you another reason for calling this an "F" puzzle.

Suggestions for extra work. — 1. You might make in the sand pan a model of the southeastern states, showing the important rivers and uplands.

2. Perhaps you would like to start a collection of clippings about the weather, somewhat like the one copied in these exercises. Be sure before you select a clipping that it tells something about how the weather helped or hindered man's work or play.

3. Try to find pictures of places in the Southeast that show ways in which men are using the lands there.

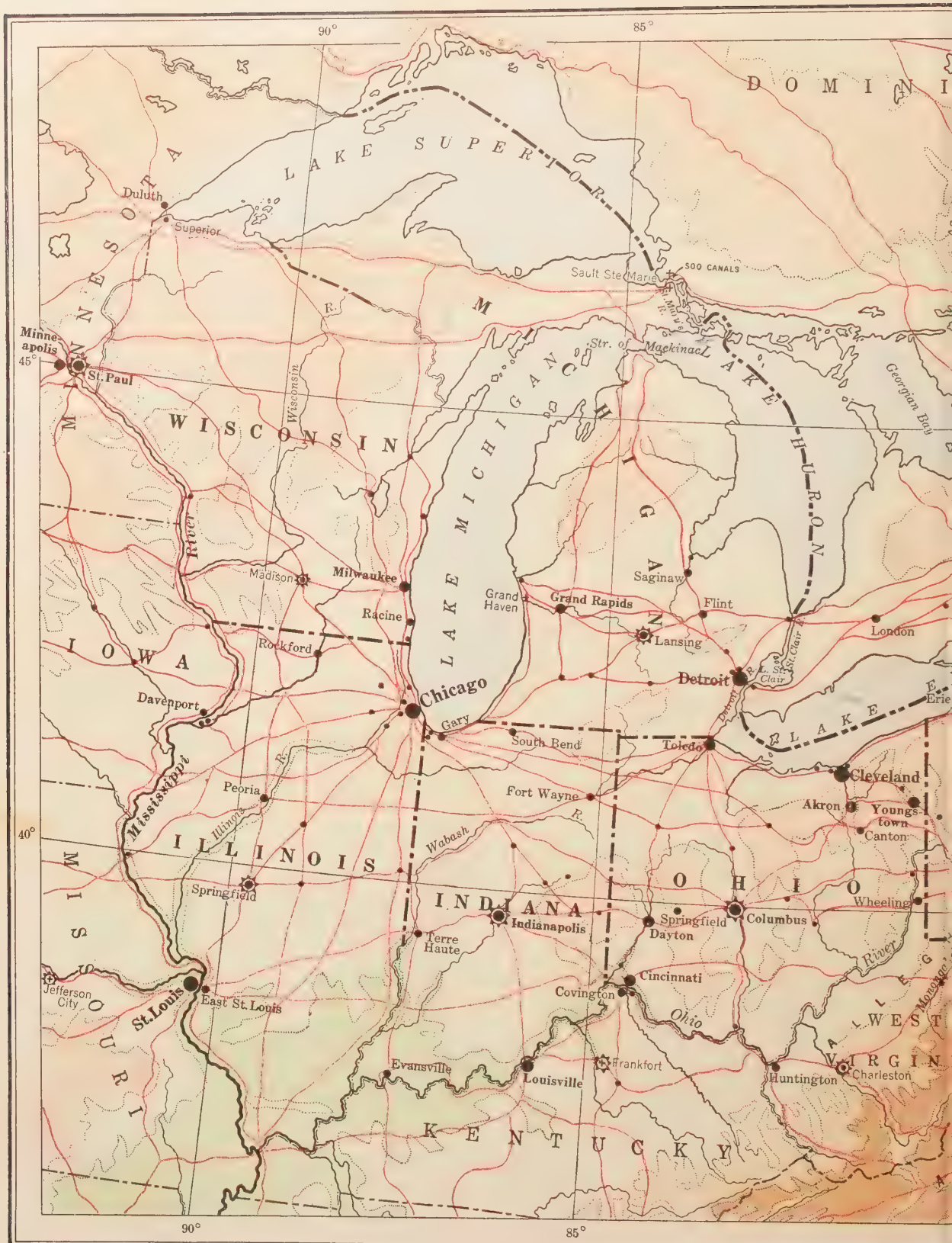

90°
85°
DOMINI
LAKE SUPERIOR
MINNESOTA
Duluth
Superior
Sault Ste Marie
SOO CANALS
St. Marys R.
MICHIGAN
Str. of Mackinac
LAKE HURON
Georgian Bay
Minneapolis
St. Paul
45°
WISCONSIN
Wisconsin River
LAKE MICHIGAN
Madison
Milwaukee
Racine
Grand Haven
Grand Rapids
Saginaw
Flint
Lansing
London
Rockford
IOWA
Davenport
Chicago
Gary
South Bend
Detroit
St. Clair R.
St. Clair
Detroit R.
LAKE E
Erie
Toledo
Cleveland
Akron
Youngstown
Canton
Peoria
Mississippi R.
Illinois R.
Fort Wayne
Wabash R.
40°
ILLINOIS
Springfield
INDIANA
Indianapolis
Terre Haute
Springfield
Dayton
Columbus
OHIO
Wheeling
Jefferson City
St. Louis
East St. Louis
Cincinnati
Covington
Ohio R.
Kanawha River
WEST VIRGIN
Charleston
Huntington
Evansville
Louisville
Frankfort
KENTUCKY
MISSOURI
90°
85°

Figure 207

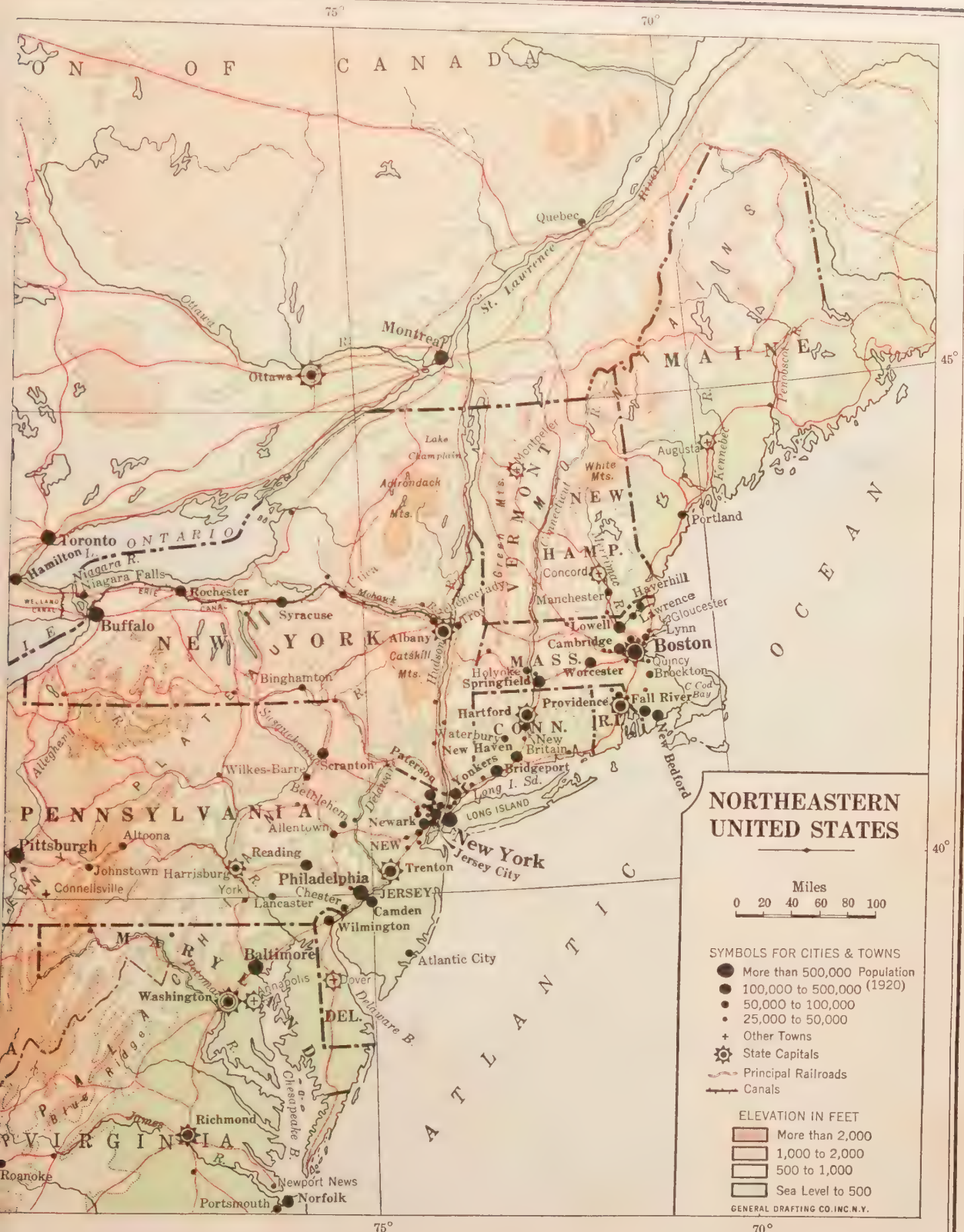

NORTHEASTERN UNITED STATES
Miles
0 20 40 60 80 100
SYMBOLS FOR CITIES & TOWNS
More than 500,000 Population
100,000 to 500,000 (1920)
50,000 to 100,000
25,000 to 50,000
Other Towns
State Capitals
Principal Railroads
Canals
ELEVATION IN FEET
More than 2,000
1,000 to 2,000
500 to 1,000
Sea Level to 500
GENERAL DRAFTING CO. INC. N.Y.
Quebec
Montreal
Ottawa
Toronto
Hamilton
Niagara Falls
Buffalo
Rochester
Syracuse
Albany
Binghamton
Scranton
Wilkes-Barre
Pittsburgh
Altoona
Johnstown
Connellsville
Harrisburg
Reading
Philadelphia
Lancaster
Trenton
Camden
Wilmington
Baltimore
Washington
Annapolis
Dover
Atlantic City
Richmond
Roanoke
Newport News
Norfolk
Portsmouth
Augusta
Portland
Concord
Manchester
Haverhill
Lawrence
Gloucester
Lowell
Lynn
Cambridge
Boston
Quincy
Brockton
Worcester
Springfield
Holyoke
Providence
Fall River
Hartford
Waterbury
New Haven
New Britain
Bridgeport
Yonkers
New York
Jersey City
Newark
Long I. Sd.
LONG ISLAND
New Bedford
C. Cod Bay
Lake Champlain
Adirondack Mts.
Green Mts.
White Mts.
Catskill Mts.
Blue Ridge
Alleghany Plateau
Hudson R.
Mohawk R.
Delaware R.
Susquehanna R.
Allegheny R.
Kennebec R.
Penobscot R.
Connecticut R.
Merrimac R.
Niagara R.
St. Lawrence R.
Ottawa R.
Potomac R.
James R.
Chesapeake B.
Delaware B.
Erie Canal
Welland Canal
ATLANTIC OCEAN
ONTARIO
NEW YORK
PENNSYLVANIA
NEW JERSEY
MARYLAND
DEL.
VIRGINIA
MASS.
CONN.
R.I.
VERMONT
NEW HAMP.
MAINE
75°
70°
45°
40°

Figure 208

By courtesy of the International Harvester Company

NORTHEASTERN UNITED STATES

Regions of the Northeast. — 1. On the outline map on which you have colored other parts of the United States, color lightly the sixteen northeastern states. Put small check marks in Illinois, Indiana, western, central, and northeastern Ohio, northwestern New York, central and southern Wisconsin, and central and southern Michigan. These states and parts of states just named belong to one of the regions of which you already have read. As you study the maps in Figures 29, 33, 92, 95, 97, 100, 101, 103, 104, 105, 106, 107, 108, 109, 110, and 207, and think of what they tell you about these lands, decide to what region you think they belong, and why. The picture in Figure 208 was taken in this region. Does it agree with one of the " pictures " which the maps gave you? You may now print the name "central mixed-farming region" on your map. Try to arrange the name so that some part of it will touch southeastern South Dakota, eastern Nebraska, central and eastern Kansas, central and northeastern Oklahoma, southernmost Minnesota, Iowa, Missouri, southern and central Wisconsin, southern and central Michigan, Illinois, Indiana, western, central, and northeastern Ohio, northwestern New York, western and central Kentucky, and central Tennessee.

2. On your outline map, put small check marks in western Maryland, southeastern Ohio, western, central, and northeastern Pennsylvania, south-central, southeastern, and northeastern New York, Vermont, central and northern New Hampshire, northern Maine, western Massachusetts, and northwestern Connecticut. What do you find about these states and parts of states from the maps in Figures 23 and 207? Find these highland parts of the northeastern states on the maps in Figures 100, 101, 103, 104, 105, 106, and 107. Do you find more land, or less, used for hay than in the southern highlands? More or less land used for corn? Although there are these differences and various others between the northern and southern districts, do not the maps suggest that these parts of the northeastern states belong to the highland mixed-farming region? Print this name on your map, trying to make some part of the name touch each part of the southeastern and northeastern states which is included in the region.

3. On your outline map, put check marks in northern Wisconsin, the northern peninsula of Michigan (the part north of Lake Michigan), and the northernmost part of the southern peninsula of Michigan.

Figure 209

Figure 210 — By courtesy of the Duluth, South Shore, and Atlantic Railroad

Look carefully on the maps in Figures 29 and 42 at the parts of the states just named, and at the pictures in Figures 209 and 210, which were taken in northern Michigan. To what region which lies partly west of the Mississippi do you think northern Wisconsin and northern Michigan belong? Print on your map the name "region of mining and lumbering" so that it touches northeastern Minnesota, northern Wisconsin, and northern Michigan.

4. Eastern Maryland, southeastern Pennsylvania, central and southern New Jersey, and Delaware belong to the Delmarvia mixed-farming region. What uses of the land does this fact suggest to you? Print the name of the region on your map in the proper place.

5. All the lands in Northeastern United States, then, belong to regions parts of which you already have studied, with the exception of the low lands along the Atlantic Coast from central New Jersey to the eastern boundary of Maine. Before you finish reading about this part of the United States in the following pages, you will find a name for this region.

Population and cities. — 1. Look again at the United States dot map of population which you made for your notebook. Look at the population map in Figure 80. At the map in Figure 120. What do these maps show you about the northeastern part of the United States? What question does this fact suggest to you?

2. Count the number of cities in Northeastern United States in which there are more than 100,000 people (Fig. 207). Compare this number with the number of cities of this size in the West (Fig. 27). In the Western Interior (Fig. 82). In the Southeast (Fig. 157). What does this comparison show you? What question does this suggest?

Directions for reading. — The questions, directions, and readings in the following pages will help you to imagine journeys in Northeastern United States. (1) As you visit various parts of it, try to find reasons why there are more people and more large cities in this part of the United States than in any other part. (2) Add all that you can to the "pictures" which you have gained from the maps and from your study of parts of the four regions which extend into the Northeast from the Western Interior and the Southeast. (3) Find ways in which the northern highland farming district differs from the southern. (4) Keep a list of the ways in which you find men fitting their work and play to the kind of land in which they live.

New England

New England's inviting shores. — Find on the map in Figure 207 the six states east and northeast of the Hudson River. These are called the New England states. Suppose you went to the part of the Maine coast shown in Figure 211. How would you find this northern shore different from the low, sandy coasts of southeastern Virginia? Along the northern coast of New England you could find many such rocky shores as those shown in this picture. Here and there steep cliffs border the sea, and along parts of the Maine coast there are fiords somewhat like those of Norway. They are, however, much less steep. In many places there are sheltered coves and inviting harbors. What things can you find in the picture in Figure 211 which suggest that this is an attractive place in which to play? From what the map shows you about the distance of Maine from the equator, at what season would you like to play there? Why?

Figure 211 *By courtesy of the National Park Service*

Figure 212 *By courtesy of the United States Forest Service*

Among New England highlands. — Notice in Figure 211 the smoothly rounded tops of the hills near the farther shore. Figure 212 is a view among the mountains of New Hampshire. The people whom you see by the shore of the lake have come for an outing in the White Mountains, as the Appalachians in northern New Hampshire are called. Find these mountains on the map in Figure 207. In Figure 19 (p. 21), you saw the highest part of the White Mountains as it looks from high in the air, and from your map you found that even that part is low when compared with the Rocky Mountains. Notice the pleasant curves of the mountain slopes in Figure 212. The smoothly rounded, tree-clad slopes of the White Mountains, of the hills in western Massachusetts, of the Green Mountains (Fig. 207) in Vermont, and of other parts of the Appalachians in New England have more charm for many people than the mighty western mountains with their barren, snow-capped peaks. The great glaciers, or "ice sheets," which thousands of years ago covered part of the United States, "scoured" and smoothed these mountains. In places, too, the great glaciers gouged out hollows, which now are filled with ponds and lakes. In other places, great quantities of rock, some of it ground very fine, and part of it in the form of bowlders, large and small, were left by the great ice sheets as they melted. Many of the stream channels were blocked in this way, and later rivers were forced to make new valleys. In many places, they flow down steep slopes, over which their waters tumble in beautiful cascades, or rapids. You may think, then, of New England's mountains as "ice-scoured." If you were to view its lovely hills and valleys, its lakes and falls, you doubtless would decide that the ancient glaciers had helped to make New England's playgrounds inviting. Many people living near the coast or among the hills make their living by taking care of the great numbers of visitors who come to spend vacations there. Most of the visitors come during the summer, but some places are visited also by people who come to engage in winter sports. Many visitors choose to live in farm or village homes rather than in hotels, and many farm families earn extra money by keeping "boarders."

Glimpses of New England farms and farm homes. — Among the hills of upland New England, as among the southern Appalachians, there are fairly level lands only in the valleys. The fields in many cases slope rather steeply. Here and there well-built, comfortable-looking farmhouses dot the valleys or snuggle against the hillsides. Many of them are white, two-story, frame buildings. Porches are few, and double or

U. S. Dept. Agr.

Figure 213. Production of crops cut for silage

"storm" doors and windows help to keep out the cold, blustery winter winds. At first sight, some of the farmhouses seem to be very large, rambling structures; a long shed connects the barn with the house, and from a distance they both seem to be parts of the same building. During cold and stormy weather, especially when the winter snows lie deep, this sheltered passageway, stored with firewood, is very convenient. Stones which were gathered from the land in order to make it easier to till have been used in building walls to fence many fields, and for the foundations of many barns and houses. The houses are much better than those of many highland districts. New England highland farms are less shut off from the rest of the world than are most of those in the southern mountains. Good roads lead from many of them to villages and cities in the larger valleys and the coastal lowlands. Vegetables and apples, which many of the farmers raise for sale, are sent to markets in the cities, and manufactured goods are sent to the farm villages from the cities. As you have learned, many city people spend their vacations on the farms.

As you might expect after reading about the scouring work of the ancient glaciers, the soils in many places are thin and stony. Moreover, the growing season in much of New England is rather short, as you can see from the map in Figure 95, and many summer days there are cool and cloudy. The chief grain crop is oats, not corn as in the southern highlands, and most of the farm lands are used for hay and for pasture. As you can see from the map in Figure 105, the tending of dairy cattle is a very important work on many New England farms. Find the New England states on the map in Figure 213. Notice what each dot on the map stands for. Most of the green food cut to put into the silos is corn. You might in summer see many fields of corn, then, which will not be harvested for grain, but will be cut while still green as food for stock. What have you learned already about the farms and their connection with the cities near-by which helps you to explain why many New England farms are well suited for dairying? What dairy products do you think could be made for sale in the out-of-the-way localities from which milk cannot be sent quickly to the cities? Do the facts shown by the maps in Figures 214 and 215 agree with what you thought?

Three surprises. — Unless you have traveled through New England, three of its farming districts probably will surprise you. After reading the next three descriptions, tell which of these districts surprises you most, and why.

The tobacco lands of the Connecticut Valley. — In Figure 216, you see a picture taken in one of these districts. Would you not have guessed that this picture was taken in Kentucky or Virginia, instead of in New England? It really was taken, however, in the lower part of the valley of the Connecticut River. Find this river on the map in Figure 207. You have learned that soils are very important in the raising of tobacco of good flavor. In this valley there are soils in northern Connecticut and southern Massachusetts which are well suited for growing a thin-leafed tobacco from which cigar wrappers are made. Find this tobacco district on the map in Figure 110. As you can see in Figure 216, part of the Connecticut Valley tobacco is grown in the shade under cotton cloth stretched on poles. The work of raising the tobacco is much like that in Kentucky, except at harvest time. Instead of cutting the plants and later stripping off the leaves, the leaves

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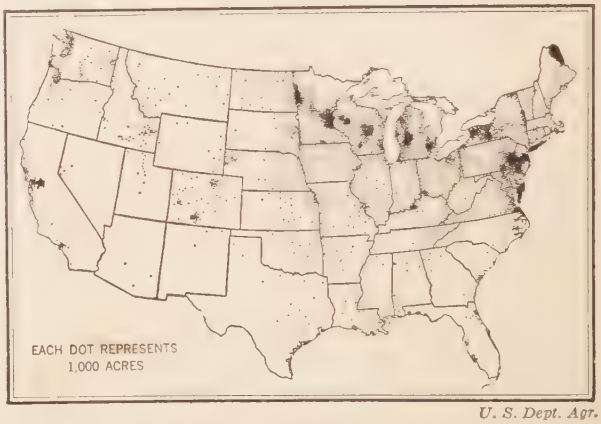
Figure 214. Production of butter made in factories

© Ewing Galloway

Figure 216

U. S. Dept. Agr.

Figure 215. Production of cheese made in factories



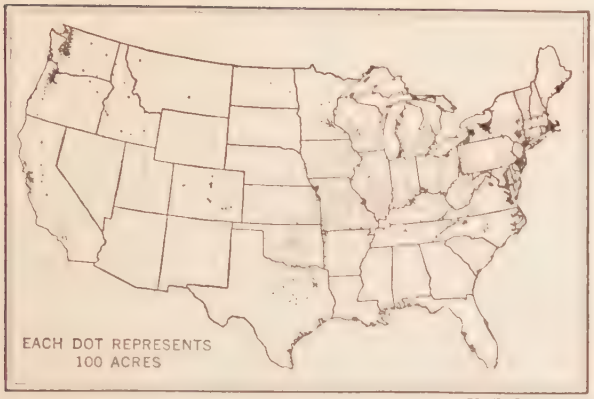
U. S. Dept. Agr.

Figure 217. Acreage of potatoes

are picked off one at a time as they reach the proper stage. This means, of course, that the fields are picked over several times. What things can you find in Figure 216 which suggest that artificial heat is used in curing the tobacco?

The great potato district of Maine. — Another surprising district is the northeastern corner of Maine. What does the map in Figure 217 show you about this part of New England? If, instead of ending your "potato journey" near New York City, you had continued north along the New England coast and on to northern Maine, you would have come at last to the county in the northeastern corner of the United States, a county which produces more potatoes than any other in the country. As you should expect, both planting and harvesting are later there than in any potato-producing district which you visited on your potato journey. You might see men at work there planting potatoes late in May, and the crop commonly is not ready to dig before the middle of September. Potatoes grow best during cool, moist weather. The summer weather in northern Maine is as cool and rainy as is the winter or spring weather in the more southern districts where early potatoes are grown. It happens, too, that some of the soils in northeastern Maine are very good for growing potatoes and that there is much fairly level land there. More than twenty thousand car loads of potatoes have been shipped in one year from this single Maine county. Although some Maine potatoes are sent to the southeastern states and to other distant markets, most of them are used in cities of the Northeast.

The cranberry bogs of Cape Cod. — On the map in Figure 207, find the peninsula in southeastern Massachusetts which partly surrounds Cape Cod Bay. It is called Cape Cod. Find it on the map in Figure 218. Most of the dots on the peninsula in this map stand for acres of cranberries. Are there many or few? If you were to travel through these "cape" lands in September, you could see many men, women, and children at work in the cranberry fields. The autumn term in near-by schools does not begin until the crop is harvested, so that the children may help in the race to gather the



U. S. Dept. Agr.

Figure 218. Acreage of bush fruits and cranberries

berries before a heavy frost occurs. The fields are almost flat and of many shapes, here and there extending into little nooks around the bottoms of wooded hills. Along the borders of the fields and running also in criss-cross patterns through the larger fields, there are ditches used in flooding and in draining the cranberry bogs or marshes. Before the picking season, the bogs are drained, so the fields are dry when the pickers work in them. At first glance, the vines seem only a few inches high, but as you watched the harvesters shoving their "scoops" through them, you would discover that the vines really are long and straggling. A scoop is a sort of box with an open front side, at the lower edge of which is a flat wooden "comb." With each shove of the scoop through the tangled vines, about a quart of berries is caught in it. After three or four shoves, the picker empties the berries from his scoop into a barrel or crate near-by.

Do you not wonder why cranberries are such an important crop on Cape Cod? In this part of Massachusetts there are many marshy flats, and cranberries are one of the few crops that do well in such places. The berries flourish best if the bogs are covered every two or three years with a thin layer of clean sand. The sand helps to keep the soil beneath it cool and damp, and to check the growth of weeds. There are sand banks or sand hills on Cape Cod near most of the bogs. The bogs are flooded during the winter in order to keep the plants from freezing. What have you learned about the heating and cooling of land and of water that helps you to explain why flooding lands tends to protect the plants? At other times, the fields are flooded to kill insect pests. There is an abundant supply of water at hand for this purpose. Finally, the growing season, though rather short, is long enough to let the berries ripen, and many city markets are fairly near.

Farming changes. — You saw that in the South farm crops and farming methods have recently been changing somewhat. In New England, farming has changed or is changing even more. In the story of the land which borders Cape Cod Bay, you find an interesting example of some of the kinds of changes which have taken place. Suppose you were to ride by train or automobile in summer through these shore lands. The roads wind among wooded hills, past many small lakes and ponds, near sand dunes, and across rolling or nearly level stretches: in some places marshy, in others green with crops of vegetables, fruit, or hay. Only a small part of the land, however, is used for farms. Here and there you would have glimpses of the ocean, and everywhere you could feel the "breath of the sea." You would pass handsome "estates," where attractive houses are surrounded by well-kept, park-like grounds, and would see many summer cottages. In addition to the modern dwellings, you would find signs of the life of long ago — for it was on the shores of Cape Cod Bay that white people made their first successful settlement in New England. This is the "land of the Pilgrims." The very villages which they started and named you still might visit. Of course these places are much changed, but the older streets and buildings help you to picture the towns as they were in Pilgrim days.

The farms of today, however, give little or no suggestion of those of the earliest settlements. The Pilgrims had to depend for food largely upon what they could get for themselves from their farm lands, from the woods, and from the waters. Where today there are estates, cottages, summer "playgrounds," poultry or dairy farms, and fields of fruits or vegetables, you then would have seen fields of corn, wheat, barley, and rye, and meadows or "greens" where the villagers cut their hay and pastured their cattle in common. As more people

By courtesy of E. W. Fuller

Figure 219

came, and settlements were built farther and farther inland, other New England farms helped to supply the settlers with the grains which were needed for food. New England farms of those early days, then, were largely grain farms. After many years, however, the time came when thousands of people moved from New England into the more fertile lands of what today is the central mixed-farming region. Railroads were built between these lands and the eastern seaboard, and presently people in the growing towns and cities of New England could get grains from the new farm lands of the Interior so cheaply that it did not pay New England farmers to raise them. It was said that "evil days" had fallen upon New England agriculture. Many farms were abandoned. Even yet, you could find in New England deserted farms, left by men who sought more fertile lands elsewhere.

While some of the "abandoned farms" of New England are still unoccupied and some now are used merely as summer homes, others have been put to new uses. Many of the farmers who stayed in New England changed their crops so that they could supply the people of the near-by cities with milk, fresh vegetables, and fruits.

Do you not see, then, from this story of New England farming, that uses of land which at one time are wise, may later need to be replaced by other uses which will fit new conditions?

In Figure 219, you can see some New England farms of today. How would you describe them? Find in the picture a suggestion of one way in which products from these farms can be sent to city markets. From the List of Illustrations find where these farms are.

When you think, however, of New England farms as they are now, you should have in mind, not only such scenes as that in Figure 219, but also "pictures" of many hay fields; of herds of dairy cows, and of partly wooded pastures; of some grain fields, mostly oats; of apple orchards; of fields of vegetables, especially near the cities; and of many woodlands. Moreover, between the larger tracts

Figure 220 © Brown Brothers

of farm lands in the valleys and lowlands, you should "picture" much land that is used for estates, much that remains in timber, and some that is unused.

Work in New England woodlands and forests. — One kind of work done in many New England woodlands may remind you somewhat of turpentining in the South. What does the map in Figure 128 show you about the kinds of trees in New England forests? In all the New England states, sugar maples are among the hardwoods. In early spring, perhaps while patches of snow still lie on the ground, the sweet sap in these trees starts to flow, and men then tap the trunks to get it. In Figure 220, you can see some maple trees that have been tapped, and the buckets that have been attached to them in order to catch the sap. The farmer is on his round from tree to tree, taking the sap to the "sugar house," where it will be boiled down to make maple sirup or maple sugar. Millions of maples in New England are tapped each spring for their sap. Vermont produces much more maple sirup and maple sugar than any other New England state.

Farm woodlands, of course, supply many farmers with fuel. Much of the wood is cut and hauled on "bob-sleds" during the winter, when farm work in general is rather light. Many little evergreen trees also are cut from New England woodlands each year, and are shipped to various places to be sold for Christmas trees. Many trees, too, are cut for making lumber, and others for making wood pulp to be used in the manufacture of paper.

The picture in Figure 221 was taken in Maine. More timber is cut there than in any other New England state. Scenes such as this one are not so common now in New England as in times past, for much of the more valuable timber there has been cut. Just as grain farming became more important in the Interior than in New England, so also, as more and more of the timber in the Northeast was "mined," men turned to the Great Lakes country, to the southern states, and finally to the Pacific Northwest for much of their lumber supply. From what you have learned of the kinds of land which always should be kept forested, do you not think there are lands in New England that always should be used for forests? If so, what sorts of lands? From Figure 63, find whether or not there are any national forests in New England. What do the facts you learn from this map lead you to expect about the future of some of the forests of New England?

Another New England building material. — Besides timber for building purposes, some parts of New England also produce valuable building stone. Of such stones, marble and granite are among the more important. Much marble and granite are quarried in Vermont. Find on the map in Figure 207 Montpelier, Vermont. In Figure 222, you can see part of a large granite quarry near Montpelier. A stone quarry looks, as you see, somewhat like an open-pit mine. From the maps in Figures 42, 43, and 171, would you expect to find other mines in New England? These maps should suggest to you one important difference between New England and most of the other sections of

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Figure 221

the United States which you have studied.

A puzzling problem. — After reading about New England playgrounds, farms, forests, and quarries, do you not wonder even more than you did after your earlier map studies why there are so many large cities there? Furthermore, to think of the chief kinds of work which you would find people doing in these cities adds to the puzzle. As of course you would expect, hundreds of thousands of people who live in them work in factories. Much of the factory work done in the other cities which you have studied can be explained in large part by the products of the farms, forests, or mines near at hand. If, however, you were to visit the factories of New England cities, you would find that in a great many of them people are at work making woolen, worsted, cotton, silk, and knit goods, in dyeing them, or in using these goods in the making of other articles. The work of making various kinds of cloth is called "textile manufacturing." Textiles rank first in importance in New England manufactures. Yet no cotton is grown in New England, comparatively few sheep are raised there, and all the silk fiber used must be brought from elsewhere. Another very important kind of manufacturing in some New England cities is the making of boots and shoes. In these factories, of course, vast quantities of leather are used. Yet very little of this leather comes from New England. In Connecticut, the making of brass, copper, and bronze wares is next in importance after the manufacture of textiles, but, as you can understand readily from your map study, New England does not produce the metals for such industries. Although textiles are also the leading manufactured products in Rhode Island, the making of jewelry is of great importance in that state. In a single recent year, about fifty million dollars' worth of jewelry was made in the city of Providence (Fig. 207). Why is this fact surprising in view of what you found out about New England from the mineral maps?

You would find many other products as

Figure 222 © Ewing Galloway

puzzling to explain as textiles and metal goods are. Yet until you see why there are many mills of various kinds in New England, you cannot understand why it contains so many large cities. From the following paragraphs, try to find the answer to this puzzling problem.

The work of earlier days in New England. — The story of the work of earlier days in New England is very helpful in understanding present work there. The earlier settlements were, as you have seen, near the coast, and the settlers depended on the sea as well as on the land to make their livings. Fish were abundant, not only in the many lakes and streams, but also in the waters off shore. From the forests close at hand, timber could be cut and used in the making of boats needed by the fishermen. For ships which brought new settlers and manufactured goods to New England from Europe, cargoes were needed to send back to Europe or to other places which the ships visited. Fish and forest products were in demand for such cargoes, and so fishing and logging became more and more important. Some men in almost every coast town were fishermen, and, as years passed, fishing boats went on longer and longer journeys to reach better fishing grounds. As larger boats were built and as many men became skillful seamen, New Englanders shipped the products of their forests and waters to other lands, not only in European boats, but also in boats of their own making. Merchant ships from New England went to many countries.

After disposing of their cargoes, such ships needed goods to bring home, unless, as sometimes was the case, the ships were sold along with the cargoes. The returning ships brought back some raw materials as well as manufactured goods. Meanwhile, as more and more settlers came, and as trade with other parts of the world grew, more products were made at home from raw materials. For example, some farmers spent part of the winter making shoes by hand from the hides of cattle that were killed for meat. Some of them were so skillful and successful in this work that it became their chief business. As the population increased and the demand for shoes grew, New England did not furnish all the skins and hides that were needed, and shoemakers depended in part upon hides and skins brought by merchant ships as return cargoes. *Work at sea, then, helped work on land.*

Falls and factories. — You already have learned that in many of the New England streams there are falls or rapids. As machinery was introduced which made it possible to use power from waterfalls in cloth-making factories, New England ships brought many return cargoes of raw cotton, raw silk, and raw wool to be used in the mills which were built near the falls. Wool for the mills came in part from New England sheep. From what part of the United States do you think cotton came to the New England factories? Trade, manufacturing, and towns grew hand in hand. Workers were needed in the mills built near the falls, and settlements made at many such places along the rivers grew into cities.

Find on the map in Figure 207 the lower part of the Merrimac River, in southern New Hampshire and northeastern Massachusetts.

Figure 223 *By courtesy of the Lawrence Chamber of Commerce*

There are falls or rapids at several places along this river. So many textile mills have been built near its various falls that the Merrimac is said to " turn more spindles " than any other river in the world. Find Lawrence, Massachusetts, in Figure 207. In Figure 223, you see water falling over a dam in the Merrimac River at Lawrence. Beyond the bridge are some of the worsted cloth mills which use power furnished by the river there. In Figure 207, find Lowell, the largest of the Merrimac cities. In Lowell, much of the water power is used in mills in which cotton cloth is made. Manchester, New Hampshire, is another manufacturing city on the Merrimac. Just as Manchester, Lawrence, and Lowell have grown around falls in the Merrimac, so other towns and cities have grown around the falls of other New England rivers. In many of these cities you could see sights much like the one in Figure 223.

Two other helps. — Coal for fuel, as well as raw materials for manufacturing, was brought by boats to New England ports. Coal helped manufacturing to grow in several coastal cities, most of which had no water power. Textile mills, for example, were started in Fall River and New Bedford, in southeastern Massachusetts. Find these cities on the map in Figure 207. They now rank ahead of Lowell in the making of cotton cloth. Coal was used not only in some textile mills, but also in other factories. Machinery for the making of shoes was not invented until much of the conveniently located water power already was being used for other mills. Shoe factories, then, used coal in running their machinery, and shoe manufacturing grew rapidly in certain towns in which there already were many skilled shoemakers and to which coal could be shipped readily.

In time, railroads were built between New England and many other parts of the United States. Then coal and raw materials were brought, not only by water, but also by rail, and manufactured products were sent both by boat and by train to be sold outside New England. The coming of the railroads helped manufacturing of many kinds, including the making of textiles and of shoes, to grow not only in coast towns but also in inland towns to which coal and raw materials could be brought by train. Even " water power towns " that need more power than the near-by falls supply use coal also to furnish power. Manufacturing, then, depended largely on trade and on power.

Fishing and shipbuilding. — Along the coasts of New England you could see today the same kinds of shore work and of sea work which went on there in early days, although many changes have taken place. The building of wooden ships is still important work in Maine. What have you learned about Maine that helps you to explain this fact? At some places, too, ships are built of steel. Figure 224 is an airplane view of shipbuilding yards at Quincy, Massachusetts (Fig. 207).

Fishing is still important, and " shore fishing " is carried on in small boats from nearly every coast town. The larger fishing operations, however, have centered in the three ports of Gloucester and Boston in Massachusetts and Portland in Maine. Find these places on the map in Figure 207. Find Newfoundland on the map in Figure 17. Many fishing vessels from these ports work near the coast of Newfoundland, where fish

Figure 224

By courtesy of the United States Army Air Service

Figure 225

© Keystone View Company

are abundant. In Figure 225, you can see part of the harbor and town of Gloucester. On the platforms in the foregound there are codfish which have been spread out to dry in the sunshine. Most of the fish brought back by Gloucester fishing vessels are either salted or dried. The fishing season lasts from March to October, and vessels catching fish to be salted make from two to four trips each season to the "banks," as the Newfoundland fishing grounds are called. Most of the Gloucester boats are sailing vessels which have engines, however, to use if needed. In each fishing "crew," there commonly are about fifteen men. On the deck of the schooner, small boats called "dories" are carried. In the fishing grounds, these are lowered into the sea, and each day the fishermen work from the dories, bringing back their catch each evening to the schooner. Each night the day's catch is cleaned and salted. In order to carry the food and equipment needed by a crew during weeks at sea, a fishing schooner must be rather large. Large fishing vessels are expensive, and this fact helps to explain the centering of the industry in a few ports. Such a centering in turn helps the development in these ports of some kinds of manufacturing which are closely connected with the work of the fishermen. In Gloucester, for example, where the main industry is the preserving of fish, there are factories in which oil and glue are made from fish refuse. Can you see how

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Figure 226

the making in other Gloucester mills of sails, anchors, nets, twine, and waterproof clothing is related to the work of the fishermen?

In Boston, nearly all of the fish are sold fresh instead of being dried or salted as at Gloucester. Indeed, Boston ranks first among the cities of the United States as a market for fresh fish. After comparing the number of people in Boston and in Gloucester (Fig. 207), and after noting on the same map the number of principal railroads that enter each place, you should see two reasons why Boston is the better place for marketing fresh fish. The newer Boston fishing vessels are fast-going steamships called "trawlers." Fish usually are caught from them in great nets, instead of by lines from dories. In less than two days a trawler can make a trip to "banks" a hundred miles from Boston and return with its catch. What reason do you see for the difference between some of the Boston and Gloucester vessels?

How do the facts which you have learned about Gloucester and Boston fishing work, together with the map in Figure 207, help you to explain the fact that the canning and preserving of fish is a leading business in Portland, Maine?

New England's greatest trading center. — Trade by sea is today, as you would expect, even greater than in earlier times. Like fishing, this work now is centered, however, in fewer places than formerly. Few or no ships now sail from various ports once famous for their merchant fleets, and much of New England's ocean trade is centered in Boston, its largest port.

In Figure 226, you are looking eastward from an airplane, across the older, central part of Boston, toward the harbor. Part of the park which you see near the center of the picture is called "The Common," and the part of it nearest you is called the Public Gardens. Near the upper, left-hand corner

of this park find a large building with a dome-shaped tower above its central part. This is the state capitol. What work does it suggest to you?

On the map in Figure 207, notice again the railroads that enter Boston. Do they not suggest to you the spokes of a wheel, the "hub" of which is at Boston? Do you find such a centering of railroads in any other New England city? Boston sometimes is spoken of as "the Hub of New England." As you learn more about the city, try to find other reasons why this name is a fitting one for it. On the map of Boston in Figure 227, find the part of the city just to the left of, and somewhat above, the letter "B" in the name Boston. This part is the heart of Boston, across which you are looking in Figure 226. How many of the places shown in the picture can you find on the map? Among the buildings shown in Figure 226 are warehouses, factories, office buildings, stores, apartments, hotels, churches, schools, and other structures such as you would find in any large city.

Boston shipping. — If you were to go along the piers of the city, you probably would see many boats from other ports of eastern and southern United States. The vessels that engage in coastwise trade bring to Boston great quantities of coal. What three facts have you learned about New England which help you to understand why much coal is brought to this port? Millions of dollars' worth of petroleum and fuel oil, of raw cotton, wool, and fish, and of several other products also are brought by these vessels that ply between Boston and other Atlantic and Gulf ports of the United States. In the case of each product named above, tell at least one fact which you have learned about New England that helps to explain why that product is brought in large quantities to Boston. What facts have you learned about New England that help you to explain why (1) textiles and (2) canned fish are carried away from Boston by vessels engaged in coastwise trade? Altogether, more tons of freight and more dollars' worth of freight are brought to Boston by coasting vessels than are taken away from it by them.

More than half the freight brought to Boston by boats from foreign lands consists of coal and fuel oil. In addition, millions of dollars' worth of wool, sugar, cotton, hides, coffee, and tea, of fibers such as hemp and jute, which are used in making rope and coarse textiles, and of several other products, are received. In New York City, what kinds of work did you find being carried on near piers where coffee and sugar were unloaded? In Boston, you also would find factories in which such work is done. In what ways do you think the other products named above are used?

The amount of freight brought to Boston by boats from foreign lands is greater both in weight and value, than the freight sent away from the port to other lands. Both in coastwise trade and foreign trade, then, the receipts of the city are greater than its shipments. Boots and shoes are among the important items shipped from Boston in the foreign trade. Most of the products of New England factories, however, are sold in the United States. This helps to account for the fact that so much more freight comes into Boston by boat than goes out by boat. Among the products which Boston ships to foreign lands are raw materials from parts of the United States outside New England.

Although the trade of the port has changed greatly since the early days of the city, much of the work of Boston is still that of gathering in by means of sea-going vessels raw materials to feed the "hungry" New England factories. New England's cities and factories, then, still depend much upon the sea. They also depend much, of course, upon railroads and upon the needs of people in other parts of the United States for such products as are manufactured in New England.

Evanston
LAKE
MICHIGAN
MELROSE PARK
OAK PARK
RIVER FOREST
MAYWOOD
BERWYN
CICERO
CHICAGO
Drainage Canal
BLUE ISLAND
LEGEND FOR THESE MAPS
Parks
Principal Railroads
Miles
0 1 2 3 4 5 6
Niagara Falls
Niagara River
GRAND ISLAND
BUFFALO
LAKE ERIE
LYNN
MEDFORD
MALDEN
REVERE
EVERETT
CHELSEA
SOMERVILLE
CAMBRIDGE
BOSTON
BOSTON BAY
BROOKLINE
PITTSBURGH
Ohio River
Allegheny R.
Monongahela R.
PHILADELPHIA
Delaware River
Camden
LOS ANGELES
DETROIT
Highland Park
Ecorse
River Rouge
Windsor
Detroit River
LAKE ERIE
CLEVELAND
SAN FRANCISCO BAY
Berkeley
Oakland
Golden Gate
SAN FRANCISCO
San Pedro Bay
PACIFIC OCEAN
ST. LOUIS
Mississippi River
East St. Louis
BALTIMORE
Patapsco River

Figure 227

Manufacturing at Boston. — As you would expect, Boston has factories of many kinds, but textile mills are not among the more important ones. However, the making of men's and women's clothing from textile materials is a leading industry. The manufacture of boots and shoes also is important. Cocoa, coffee, and sugar are among the principal foodstuffs which Boston factories supply. Several thousand people there and in near-by towns are engaged in the printing of books and magazines. Altogether, more manufacturing is done in Boston than in any other city of New England. In spite of this fact, however, Boston is more famous as a great port and a great market place than as a manufacturing center.

Boston as a market center. — Boston is the greatest wool market in the United States. Millions of dollars' worth of wool sometimes are stored in warehouses near its piers. In some of the buildings near the harbor, you could visit the offices of more than a hundred firms whose business is the buying and selling of wool. Buyers come to Boston, not only from other cities in the United States, but also from foreign cities to purchase wool for use in their factories. You might also visit the offices of many firms engaged in buying and selling hides, leather, and leather goods, for Boston is the chief market place in the United States for leather. Although, as you have learned, New England textiles are manufactured for the most part in other cities, many of the textile manufacturing companies have display rooms in Boston, where purchasers may examine samples and buy goods without visiting the mills themselves.

Some reasons for Boston's growth. — From the picture in Figure 226 and the map in Figure 227, you have seen that Boston has a roomy harbor. That fact, of course, helps to explain why so much ocean trade has centered there. You have learned, too, one fact about Boston railroads that helps to explain it. What is it? From the map in Figure 207, find whether or not any other Massachusetts coast city is as far west and at the same time as centrally located as Boston is with regard to other Massachusetts cities. If Boston were shown on the map in Figure 7, where would the dot for it be? From this map, which do you think would be longer, a trip from northwest Europe to Boston or one to New York? How do these facts help you to explain why Boston has grown to be a great seaport? How many reasons can you now give why " the Hub of New England " is a fitting name for Boston?

Do not the kinds of work which scores of thousands of people are doing in Boston help you to see how the land work and the sea work of the people of New England depend much on each other?

Work in other coast cities. — On the map in Figure 207, find Portland and Providence again; find New Haven and Bridgeport, Connecticut; Fall River and New Bedford, Massachusetts. These are other New England ports at which trade has centered. However, more tons of sea-borne freight are handled at Boston than are handled at all these ports together. From the following sentences, find three ways in which the trade of these ports is like that of Boston. In the case of each of them, *coastwise* trade is greater in tonnage than *foreign* trade, and the amount of freight *received* by boat is greater than the amount which the ships *carry away*. Coal is the chief item received. This last fact is, of course, not surprising, for, as you might expect from the study of some of these cities, all of them are important manufacturing centers, and manufacturing grew in them partly because coal could be obtained by boat. Again you see how New England ships have served New England factories.

If you were to visit Portland in the winter, you might see many foreign ships being loaded or unloaded there. If you were

there in the summer, you probably would see fewer foreign ships, for much less foreign trade is carried on there at that season. Is this not the opposite of what you would have expected? Portland differs in another way from Boston and the other New England ports. It ships *to* foreign lands more freight than it receives *from* them. If you were to watch men loading the vessels that go in winter from Portland to distant lands, you would find that most of the cargoes which they carry consist of grain and of meat products. Yet you have found that New England produces little grain and few beef cattle. Keep these puzzling facts in mind, and before you complete the study of the United States and Canada, you will find reasons for them. Some of the products which you could see being unloaded at Portland are, at first thought, as surprising as those which are sent away. For example, Portland receives thousands of tons of pulpwood and china clay. Does it not seem strange for a forest product to be brought into Maine? Do you not wonder what china clay is used for there? When you think, however, (1) that the most valuable manufactured products of Maine are paper and woodpulp for paper, (2) that many of the forests of the state which once supplied its pulp mills with wood have been cut over, and (3) that china clay is used in the making of paper, you can see some reasons for this inbound trade.

In the other ports, many of the items of trade are those which you might expect. What have you learned in your study of New England, for example, that would help you to see reasons for the following two facts? (1) Providence ships millions of dollars' worth of textiles. (2) The Connecticut ports ship thousands of tons of metal manufactures.

The mention of New England ports in general should now suggest to you (1) more coastwise trade than foreign trade, (2) more inbound freight than outbound freight, and (3) the handling of great quantities of coal.

Check exercise. — 1. Try to find, in magazines, advertisements of articles manufactured in New England cities. Make a list of the kinds of factory products you find advertised. You may be able to include in your list, for example: Waterbury clocks or watches; Boston, Lynn, Brockton, or Haverhill shoes; Holyoke paper; New Britain knives and forks; Springfield guns; Bridgeport hardware; and metal articles ranging in size from hooks and eyes to machinery used in the mills which make these various products.

These advertisements may make you wonder why certain cities specialize in particular products, or why neighboring towns manufacture very different articles. Just as you had to learn something of the story of early New England in order to understand present work there, so in most cases you would have to study some facts in the earlier story of a given town in order to understand why it manufactures what it does. In many instances you would find that the men who started the earlier factories were skilled in the making of some special kind of article. A tinsmith, for example, may have chosen to establish a small shop for the making of tinware in his home town. If his venture was successful, other people there also became in time skillful workers in that line. Men who later wished to start factories of the same kind were likely to build them in that town because the supply of skilled tinsmiths was greater there than elsewhere. In this way, manufacturing of particular kinds became centered in certain cities.

2. A list of *all* the things manufactured in New England cities would be very long. Many of the articles which would appear in such a list are among those which you use almost every day. This book, for example, was printed in a town near Boston. Perhaps you write some of your lessons at school on paper made in Maine. Make a list of clothing, tools, and other things that you need in your work or play which might have come from New England factories. The following suggestions will help you. Perhaps the cloth in the suit or dress you are wearing was woven somewhere in New England, and the buckles or the hooks and eyes on it may have been made in Connecticut. Perhaps both your shoes and stockings were manufactured in Massachusetts. You may have skated on New England skates, or played with a New England gun. Perhaps you have worn Rhode Island jewelry, used Connecticut cooking utensils and clothespins made in Maine, sewed with a Connecticut needle and

Figure 228 *Underwood and Underwood. © Hamilton Maxwell*

with Massachusetts thread, or worked with Connecticut tools. At night you may sleep on a bed spring made in New England.

3. What question do the signs for state capitals on a map now suggest to you? How would you answer this question about New England capitals?

4. By following the directions for reading given on page 173, you should have found: (1) some reasons why there are so many people in southern New England, and why there are fewer in northern New England; (2) some ways in which the New England highland farming district differs from the southern highland district; (3) some "pictures" of work and play in New England, and of places in which they are carried on; and (4) some instances of how men fit work and play in New England to the kind of land there. Tell in each case what "reasons," "pictures," or "ways" you found.

5. You should now be ready to consider a name for the "work region" along the coast from central New Jersey to the eastern boundary of Maine, so that you can complete the outline map on which you have printed the names of other regions. As you think of the summer homes and seashore "playgrounds" of New England's coastal lands, of its fishing fleet, its ocean trade, of the ways in which many of its farms serve directly the needs of its city people, of its many factories, and of the story of how these factories came to be, does it not seem that the most striking fact about the district is the way in which the sea as well as the land plays an important part in the lives of its people? You have seen that much work in the New York Harbor cities also is related to the sea. Would you not then give the region a name which suggests not only land but also sea? The word "maritime" means "related to the sea." Will not the more important kinds of work which the people are doing there be suggested to you hereafter, then, by the name "maritime and manufacturing region"?

6. Figure 228 is an airplane view of Bridgeport, Connecticut. What facts which you have learned about this city are suggested by the picture? What in the picture suggests "maritime" work? In what ways are lands near the coast being used? What things in the picture suggest manufacturing? Does the location of any of the factories suggest that they perhaps use coal brought by boat, or that their products may be shipped by boat? If so, how?

7. Figure 229 is a view of a village in western Massachusetts in the highland mixed-farming region. What facts which you have learned about this region are suggested by the scene? It shows you that other work besides farming is done in these highlands. What kind of work is suggested by the dam and the buildings at the left of it? You should see from the picture one probable reason why men chose this place for a highland village. What reason can you give?

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Figure 229

© Ewing Galloway

Figure 230

For your notebook. — Fill the blanks in the following paragraph and copy it in your notebook. Give it a good title.

" In New England's many factory towns, hundreds of thousands of people are engaged in the making of t——, s——, me—— products, p——, and other articles. The waterfalls of New England, its trade by land and by sea, its many workers, and the needs of the people of the United States for products of New England factories have helped these many manufacturing cities to grow."

Print the name " maritime and manufacturing region " on the outline map on which you have printed the names of other regions. In doing so, be sure that you remember what is included in the region (p. 173).

Journeys in Other Parts of Northeastern United States

Seeing great cities. — Find on the map in Figure 207 New York City, Buffalo, Chicago, Pittsburgh, Baltimore, and Philadelphia. Suppose that after viewing New England cities, you were to go from New York to Chicago by way of Buffalo, and were to return by way of Pittsburgh, Baltimore, and Philadelphia. The discoveries which you would make on such a journey would help you to understand why so many people live in Northeastern United States (p. 173). In planning such a trip, you would find that there are several routes over which you might go from New York to Chicago, and between various other cities that you would visit. Making a map of the routes you might choose is a convenient way of keeping a record of them.

Figure 231 *By courtesy of the International Harvester Company*

Starting a map record. — On a blank outline map of the United States, put a dot for New York City and one for Chicago. Draw *very lightly*, with pencil, a line showing the shortest distance from New York to Chicago. Draw on the map the Hudson River. By using the map in Figure 207, put on your outline map dots for Jersey City, Albany, Syracuse, Rochester, Buffalo, Cleveland, and Toledo. Draw on your map a line showing the route from New York City to Jersey City, north along the *west* bank of the Hudson to Albany, then west through Syracuse, Rochester, Buffalo, Cleveland, and Toledo to Chicago. This is the route followed by some of the trains on which you might go from New York to Chicago. Is it as short as the airline route you drew, or not? Find on the map in Figure 207 the railroad which follows this route.

Add to your outline map a dot for Detroit. Draw on your map a line showing a route from New York City north near the *east* bank of the river and across the river to Albany, thence west through Syracuse, Rochester, Buffalo, *part of Canada*, and Detroit, to Chicago. Find on the map in Figure 207 the railroad which follows this route. How does it differ from the first route? Is it as short as the airline route?

Add to your outline map dots for Paterson and Scranton. Draw a line to show the railroad route from New York through Paterson, Scranton, Buffalo, and Cleveland to Chicago. Is this route shorter or longer than the first railroad route mentioned? Than the airline route? Which city is on all three railroad routes?

There are still other railroad routes over which you might go from New York City to Chicago. You might travel, too, partly by rail and partly by water. None of these routes, however, is as short as the airline route. The following exercise should help you to see why the railroads do not follow the shortest line. Perhaps you have thought already of a reason. If so, see if it agrees with the reason in the exercise.

Routes and mountains. — Find in Figure 207 the place where route 3 crosses the boundary between New Jersey and Pennsylvania. The picture in Figure 230 was taken near this place. Since this lower place in the mountains was cut by the water of the Delaware River, it is called the Delaware Water Gap. Where are the railroad tracks? Does not the map, together with what you have learned about the railroads of the West, suggest to you one reason why men chose to build the railroad there? If railroads are built along streams, they cannot follow a straight line unless the streams do. See which of you can find the most places on the map in Figure 207 where a railroad follows a stream in crossing the Appalachian highlands. Do you now see one reason why the railroad routes from New York City to Chicago are not so short as the air route?

The picture in Figure 231 was taken near Albany. The stream is the Mohawk River. In what ways does its valley here differ from that of the Delaware at the Water Gap? What kinds of highways besides the railroad have been built here? Find in Figure 207 the Mohawk River. Do you see now

Figure 232 © *Ewing Galloway*

why the Hudson-Mohawk route is called the "lowland route" from New York City to the Great Lakes, and one reason for the fact that railroads are built far from the shortest possible line in order to pass through these valleys?

Geographic traveling. — By this time you should be much better geographic travelers than when you journeyed "in distant lands." You have used maps and pictures so much in learning how men in various regions fit their work and play to the kind of country in which they live that with good maps, illustrations, and a few suggestions you can take imaginary trips "by yourselves." You should now know many of the sorts of things for which a geographer looks as he examines a place or travels through a region. You will find that what you have learned about other parts of your country will help you greatly in explaining what you see in Northeastern United States (p. 173). The following pages will guide you in your "sightseeing" and in your explanations of what you see.

Kinds of farming. — What do the maps in Figures 100, 101, 103, and 104 tell you about uses you might see men making of farm lands in New York? For which of the crops suggested by these maps is the greatest amount of land used? Do you think there is more grain farming in the eastern part of the state, or in the western part? What does the map in Figure 207 show about western New York which

Figure 233 *By courtesy of the International Harvester Company*

helps you to explain this fact? From the maps in Figures 159, 160, 217, and 218, what two other kinds of farming do you think you might see in western New York? What kind of farming is suggested by the maps in Figures 104 and 105, and the picture in Figure 232? From the maps you have just studied, which kind of farming do you think is most important in New York — dairy farming, fruit farming, grain farming, or truck farming? As you read the following paragraphs, check the ideas which the maps gave you. Find reasons why men are using lands in New York as they are.

Dairy farming. — The picture in Figure 232 was taken several miles north of New York City. What do you think the man who lives on this farm might sell to the people in the city? What have you learned about New York City which helps you to understand that enormous amounts of milk and cream are needed there every day?

The value of the dairy products of New York farms is greater than the value of any farm crop in the state, and milk is by far the most important dairy product. How do the maps in Figures 80, 120, and 207 help you to explain the great amount of milk needed in the state? Moreover, eastern New York is in the highland mixed-farming region. Many of the hillier lands in the state are better suited for meadows and pastures than for the raising of grain, fruit, or vegetables. Enough rain falls so that timothy and clover grow well there, and there are many warm, sunshiny summer days when hay can be cured.

In western New York. — In the plains in the northwestern part of New York, which belong to the central mixed-farming region, more land is used for growing grain than in the eastern part of the state. In Figure 233 you can see wheat lands near the highland region. There also is much land in western New York which is used for the growing of truck and fruit crops. How does the number of cities in

Figure 234 *By courtesy of Clifford Zierer*

New York help you to explain the demand for fresh vegetables and fruits there? Among the vegetables grown in large amounts are sweet corn, peas, tomatoes, and asparagus. There are more acres of fruit trees in New York than in any other state except California. About half the fruit acreage of New York is used for apple orchards. Some of the lands near lakes Erie and Ontario are especially well suited for the growing of bush fruits and grapes, and many acres there are used for these crops. In these parts of New York there is less danger of spring and autumn frosts that harm fruit crops than there is in most other parts of the state. What have you learned about the heating and cooling of water and of lands near it which helps you to explain this? The grapevines that grow in New York are not just like those in Mediterranean lands and in southern California. As you might expect, varieties of grapes which are grown in the rather rainy New York district are not made into raisins and currants. Most of them are eaten as fresh fruit or are used for making grape juice.

The time of the journey. — The train ride from New York City to Buffalo takes usually from nine to twelve hours, according to the length of the route you take and the speed of the train. Would you choose, then, to start from New York City in the morning, at noon, or in the evening? Why? Would you rather go in summer or winter? Why? How many things can you name now that you might see on a journey across the state in summer?

Scenes along another route. — If you were to go to Buffalo from New York City over the route through Delaware Water Gap, through what large city in northeastern Pennsylvania would you pass (Fig. 207)? In and near this city many men are engaged in the kind of work that is suggested by the tall building and the dump heap in Figure 234. From the map in Figure 171, find what there is to be mined in this part of Pennsylvania. Perhaps you can get a sample of hard coal (or "anthracite") and one of soft (or "bituminous") coal, and compare them. Many people in the United States like to burn hard coal instead of soft coal to heat their houses because it burns with less smoke and makes less soot. From Figure 171, find which kind is mined at Scranton. What other anthracite districts can you find besides the one near Scranton? You see, then, that nearly all the anthracite produced in the United States comes from the mines in northeastern Pennsylvania.

The large building shown in Figure 234 is called a "breaker," because in it there is machinery for breaking up large pieces of coal. In this building, too, the coal is sorted into pieces of about the same sizes before it is dumped into the freight cars which carry it away from the mine. You would find such buildings near the mouths of both anthracite and bituminous mines, though in the bituminous industry they are called "tipples." Most of the work of the miners is of course done underground, and the coal which they dig is hoisted to the breaker. Near the breaker in Figure 234, you can see a huge "culm" pile. Culm consists largely of dirt and slate from the mines, but some culm piles contain enough coal so that it pays men to work them over and "wash" the coal out of them. Men also get anthracite from the beds of some of the streams in the Scranton district. For this work they use dredges somewhat like the gold dredges used in the West (p. 40). Can you explain how coal comes to be in the beds of some of these streams? (P. 153.) The amount of anthracite that is *mined* is vastly greater than the amount that is dredged from streams and washed from culm piles.

Find on the map in Figure 207 the sign for the river that flows through Scranton.

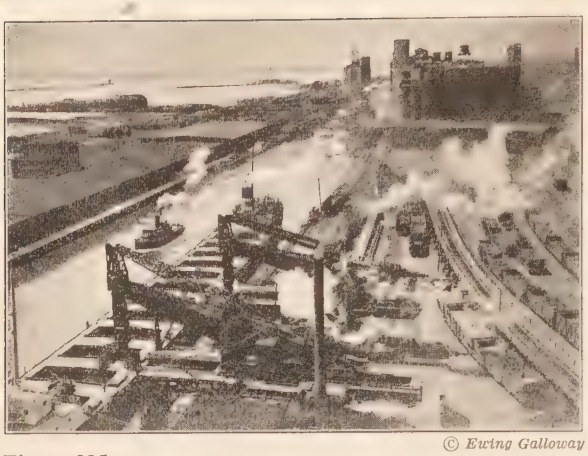

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Figure 235

© Kadel and Herbert

Figure 236

Notice on the map the railroad which follows this river into Scranton from the northeast. Follow the railroad down the river and on southwest to Wilkes-Barre, in the Susquehanna Valley. Not only in Scranton and Wilkes-Barre, but in many other towns along this line, the mining of anthracite is important.

A more detailed map than that in Figure 207 might show that this "anthracite belt" lies between two mountain ridges in which there are few breaks. In a few places these mountain "walls" are pierced by river valleys, along which railroads enter the Scranton–Wilkes-Barre lowland. At each of these railroad junctions a city has grown. Near Scranton only, however, is there a break in each of the mountain walls. The railroad on which you would pass through Scranton on the way from Delaware Gap to Buffalo enters the city through one of these breaks, and passes out through the other one. Railroads from four directions, then, meet in Scranton. As you might expect, Scranton is the largest city of this lowland mining belt. Do you not see how the location of Scranton is favorable not only for mining coal, but also for shipping it? At various places along your route from New York City to Buffalo, you might pass whole trains of cars which, like those in Figure 234, are loaded with anthracite.

Besides the thousands of men in Scranton and Wilkes-Barre who mine anthracite, there are thousands of people there engaged in other kinds of labor. In Scranton, you would find many men, as you might expect, employed in railroad work. Some, for example, work in car shops. You also would find factories, and, of course, many business buildings. Scranton and Wilkes-Barre both are famous for their silk mills. In many cases, these mills are near coal mines. Living near the mines there are hundreds of miners' wives and daughters who are willing to work in the neighboring silk mills to earn extra money. In these mining cities, then, silk manufacturers find women and girls who will work for rather low wages. Since anthracite is used as fuel in electrical plants which furnish much of the power used in the mills, and since the mills are located largely with reference to the mines, will not mention of the manufacture of silk in Scranton or Wilkes-Barre hereafter suggest to you the mining of anthracite in the district?

What "signs" of coal mining do you think you could recognize hereafter from a train window?

As you pass through other cities, for what sorts of things will you watch in order to learn as much as you can about what men are doing in each place?

Seeing Buffalo harbor. — Figures 235 and 236 show parts of the harbor of Buffalo. Find things in these pictures which suggest to you at least two kinds of work which men do there. By comparing the picture in Figure 236 with the map of Buffalo in Figure 227, try to find in what general direction you are looking in that picture. At many Buffalo terminals, there are great grain elevators in which millions of bushels of wheat can be stored at one time. Buffalo sometimes is called "the elevator city." The water nearest to you in Figure 235 is part of the "inner harbor." The lake boats which bring grain must come into the inner harbor to reach the elevators. Farther away, find part of the "outer harbor," and the breakwaters that help to make it safe. At times you might see boats anchored in the outer harbor, waiting their turns to unload at the elevators. From the elevators, much of the wheat is put on freight cars and some of it on canal barges to be sent to other places. Find on the map in Figure 207 the canal along which barges can pass from Buffalo to the Hudson River. A large part of the wheat goes to New York City, and some of it is sent from there to foreign lands.

The huge machine near you in the picture in Figure 235 is one which unloads iron ore from large ore boats. The big grab bucket is lowered into the hold of the boat, where its "jaws" close at one "bite" upon several tons of ore which are then lifted and dumped into a waiting car. Such a machine can unload a boat carrying 11,000 tons of ore in a little less than three hours.

Of course you would find other things, too, such as lumber, being unloaded at Buffalo docks. Much package freight also is received there. You could see several docks used just for the loading of coal on to lake vessels. Most of the coal shipped on lake steamers from Buffalo to other places is anthracite. From what district, then, does it come? How is it brought to Buffalo?

A trip on a coal and ore boat. — Probably the ship from which you see iron ore being taken in Figure 235 went, as soon as it was emptied, to one of the coal docks to be filled with anthracite which it carried back on its trip for more iron ore. To get this ore, boats make a long lake journey from Buffalo, in most cases to the western end of Lake Superior. Of what two iron-ore shipping ports there have you already learned? It takes a loaded coal boat about eighty hours to make this journey. If you left Buffalo, then, on such a boat at seven o'clock on Tuesday morning, when would you expect to arrive at Duluth?

On the map in Figure 207, find the narrow places through which you would pass on this lake journey. In order to let large boats pass through them, men have had to deepen parts of the waterways which connect Lake Erie and Lake Huron, and also the river between Lake Huron and Lake Superior. In St. Mary's River, moreover, there are rapids. The canals which have been built around these rapids are called the Soo Canals. One is on the Canadian side of the river, the other on the American side. Figure 237 is an airplane view of "the Soo," looking north from the American town of Sault Sainte Marie, Michigan, to Sault Sainte Marie, Canada. Find the rapids, and the canals which lead past them. The right-hand side of the picture is toward Lake Huron, the left-hand side toward Lake Superior. The trip through the Soo is one of the more interesting parts of the journey by lake from Buffalo to Duluth. As your boat passes through one of these canals, it must be raised about twenty feet from the level of Lake Huron to the higher level of Lake Superior. This is done by means of "locks." A lock is a part of the canal which is walled off so as to form a huge tank. It has a gate at each end. When the gate nearest Lake Huron is open, the water in

Figure 237 *By courtesy of the Sault Ste. Marie, Michigan, Civic and Commercial Association*

the lock is at the same level as that in the river below the rapids. Your ship enters the lock, and the gate is closed behind it. Then more water is let into the lock, so that gradually the level of the water it contains is raised to the level of the river above the rapids. Then the gate at the Superior end of the lock is opened, and your boat sails out at the higher level. Would you not like to be lifted in this way between Lake Huron and Lake Superior? Can you find in Figure 237 the four American locks and the one on the Canadian side?

There is at times another hindrance to lake trips which men have not been able to overcome. Can you see in Figure 238 what it is? This picture was taken on St. Mary's River. When the ice is thick, steamers cannot go through at all. Ice forms not only in the narrow, shallow straits and rivers that connect the Great Lakes, but also near the edges of the lakes themselves. For these reasons, Buffalo harbor and the other harbors on the Great Lakes are closed for a part of each year. In most years, the "open season" at Buffalo lasts from about the middle of April to the middle of December. Which is longer, the open season or the closed one? The harbor at Duluth-Superior usually is not open till later in April. From the map in Figure 207, find one reason why you think it is closed a little longer than the harbor at Buffalo.

When your boat arrives in the Duluth-Superior harbor, it goes first to a coal dock where a machine somewhat like the one which unloaded ore at Buffalo unloads the coal. It then goes to an ore dock, like the one you saw in Figure 126. From the following account of another lake vessel, find

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Figure 238

about how much time it takes to load a large boat with ore at such a dock. This vessel had not brought any cargo to be unloaded. "The Corey arrived at Duluth at 1:40 P.M., and was ready to load at 2:43 P.M. Loading began at 2:43 P.M. and was concluded at 3:08 P.M. She left the dock at 3:15 P.M." This vessel carried about 10,000 tons. Which takes longer, to load or to unload a given ore vessel? Since vessels can be loaded at this rate, and there are many of them, much ore can be shipped in a short time. As you have learned, more iron ore is shipped from the Duluth-Superior harbor than from any other harbor in the world.

Describe your trip through the Soo Canal on the journey back to Buffalo. Perhaps you can show in a sand pan just how your ship would go through one of the locks. Is the water in the lock raised or lowered as you go from Lake Superior to Lake Huron? A boat sometimes makes as many as thirty trips from eastern Lake Erie to western Lake Superior in a single navigation season. Some boats go back empty from Lake Erie in order to make more trips, and so to carry more ore, during the open season.

Other lake shipping. — Other things besides iron ore are brought from the shores of Lake Superior to ports on the other lakes. Much wheat, for example, is shipped from Duluth-Superior. What do you know about the regions near Duluth that helps you to explain this (p. 99)? Find on the map in Figure 207 the long point of land jutting northward into Lake Superior from its southern shore. Find this peninsula on the map in Figure 42. The dot in it on that map stands for copper. Some copper is shipped from this peninsula to Buffalo. By far the greatest part of the freight from Lake Superior, however, is iron ore. By reason of the great amount of ore carried, more tons of freight pass through the American Soo Canal each year than go through any other canal in the world. Most of the ore does not go to Buffalo, but to other lake ports. Among lake harbors, however, Buffalo ranks second only to Duluth-Superior in the amount of freight of all kinds which is handled. Not only part of the iron ore, but also, as you have seen, wheat, copper, lumber, package freight, and other things come there by lake. Some are sent from the shores of Lake Huron and Lake Michigan, as well as from Lake Superior. To Buffalo come not only things to be used in the city itself, but also things bound for New York City and other places east of Buffalo.

Think again just where on Lake Erie Buffalo is. Think, too, what you have learned about the route through the Mohawk Valley. Buffalo, then, lies where lake highways meet a great land route to the Atlantic.

Niagara Falls and Buffalo. — If from Buffalo you were to take a side-trip to the place shown in Figure 239, you would find something else that helps to explain why so many people find work to do in Buffalo. On the map in Figure 207, find the river which flows from Lake Erie into Lake Ontario. The east bank of this river is in what country? In what country is the west bank? In the picture in Figure 239, taken from an airplane, you are looking southwest toward Niagara Falls. At the right of the picture is the Canadian shore of Niagara River, at the left the American shore. The falls near-

Figure 239

© Underwood and Underwood

est you are the American Falls, and those beyond the island in the river are the Horseshoe Falls, which are partly in Canada. These falls are among the more beautiful sights in North America. You look at great torrents of foaming water, plunging over a precipice about one hundred sixty feet high into swirling rapids below. So much of the falling water dashes into spray as it strikes the rocks below that the falls are partly hidden in the mist. Do you wonder that many tourists come to Buffalo each year to visit Niagara?

This, however, is only one way in which Buffalo profits by being near these falls. What have you learned from this picture about the level of Lake Ontario as compared with the level of Lake Erie? The difference between the levels of these lakes is more than fifteen times as great as the difference between those of Lake Huron and Lake Superior. A Canadian canal, called the Welland Canal (Fig. 207), has been built to connect Lake Erie with Lake Ontario, but it is not deep enough for the larger lake boats. Because of Niagara Falls, then, what city is the eastern end of the Great Lakes highway for *large* boats? Tell now another reason why much lake freight is sent by way of Buffalo to places farther east.

In what way would you expect men in Buffalo to make use of Niagara Falls? Find in Figure 239 the long building at the water's edge on the Canadian side just below the falls. This is a power house. There are other power houses on the American side. Electric energy from these power plants is carried not only to Buffalo, but to Rochester, Syra-

Figure 240 © Kadel and Herbert

cuse, and other near-by cities. These cities, then, can get for light, heat, and power, not only coal from Pennsylvania, but also electricity from Niagara. As you would expect, thousands of people find work in mills and factories in these cities. In Buffalo, flour mills, slaughtering and meat-packing houses, machine and car-repair shops, and furnaces for making iron and steel are very important, and many other kinds of manufacturing are done there. What have you learned already about Buffalo that helps you to understand why flour, iron, and car repairs are made there?

Another view of Buffalo. — What kinds of work are suggested by the larger buildings which you see in the part of Buffalo shown in Figure 240? Would you expect the homes of the people in Buffalo to be more or less crowded together than those in New York City? Why? Does your opinion agree with what the picture in Figure 240 shows?

Check exercise. — What does Buffalo now suggest to you?

Fill the blanks in the following statements so that they will tell six things about the location of Buffalo that help to explain the kinds of work done by many of the people who live there. Buffalo is: (1) at the —— end of the only lowland route between New York City and the Great Lakes; (2) at the —— end of the Erie Barge Canal; (3) at the —— end of Lake Erie; (4) at the —— end of the main Great Lakes highway; (5) near —— Falls; and (6) near —— in Pennsylvania. What has the story of Buffalo helped you to add to your story about New York City (p. 17)?

Work in other New York cities. — Probably some of you are using each day things made in one or another of the many New York cities. You may use dishes, for ex-

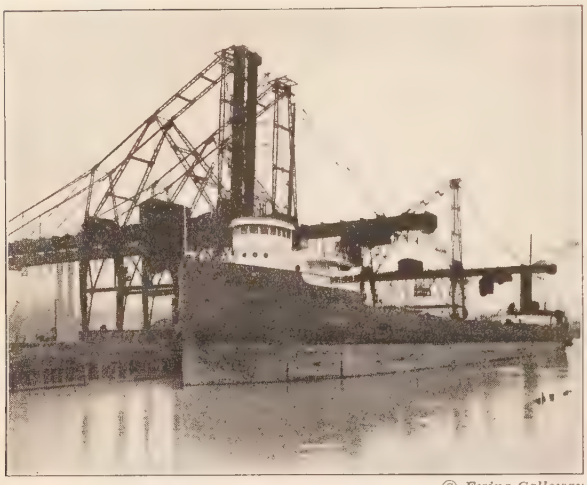

Figure 241 © *Ewing Galloway*

ample, that were made in Syracuse. In some of these cities, there are paper mills and lumber mills. Part of the wood they use comes from the forests on the higher, rougher lands in New York (Fig. 29). In many cities there are flour mills. In one city, collars and cuffs are the chief manufactured products. In another, hosiery and knit underwear are most valuable. When you buy clothing, do you ever try to find out where it was made? It will be fun to run a race to see which of you can find in magazine advertisements the greatest number of things that are made in New York cities. If the cities you find mentioned are not named on the map in Figure 207, look for them on the map in Figure 322. A list of all the things manufactured in these cities would be very long indeed. Just as in the case of New England cities (p. 188), many kinds of goods might be made in these New York cities almost equally well, and so the people who start factories in them choose to make the particular things which they think *they* can *make* best and *sell* best. You cannot tell, then, just why they make gloves in one city and shoes in another, but you should have learned from the story of Buffalo two facts about these cities that help you to understand why they have so many factories.

Rochester's most valuable manufactured product is the same as that of New York City. What is it, then? In early days so much flour was made in Rochester that it was called the "flour city." Now other products are more important, but it sometimes is called the "flower city" because of its nurseries, where young fruit trees, trees of other kinds, shrubs, bulbs, and plants are sold. What have you learned about the farm lands near Rochester that helps you to understand why this is a good place for nurseries? Do you think many or few fruit trees and berry plants would be needed near-by? Why? (See Figs. 160 and 218.) Rochester also is famous for its cameras and other lens instruments, such as telescopes and field glasses.

The more important things to remember about manufacturing in the cities from Albany to Buffalo are *not what each of them makes, but rather what advantages they all have for manufacturing.* Four of these are: (1) Raw materials from many places come by railroad or canal to cities along the Mohawk-Hudson route between the Atlantic Ocean and the Great Lakes. (2) Coal comes to them from Pennsylvania mines, not far away, and many falls that furnish water power are near. (3) They are in a thickly populated part of the country, where skilled labor is abundant. (4) They can readily ship their products to many markets.

Westward from Buffalo. — As you go westward by rail from Buffalo to Toledo, along what shore do you ride? From Figures 100, 101, 104, 159, 160, and 217, find several uses which you think you might see men making of lands at some places along this route. How many lake ports through which you pass are shown on the map in Figure 207? Which are named there? From what you now have learned about the freight carried on lake boats, what would you expect to see being unloaded at these ports? As you continued westward, you would pass before reaching Chicago along

Figure 242 © Ewing Galloway

the southern shore of another of the Great Lakes. Which one? Along this shore find on the map a port through which your train would pass before arriving at Chicago.

"Coal and iron" ports. — The picture of the ore boat in Figure 241 was taken at Toledo, but one very much like it might be taken at almost any of the ports you have found, for iron ore is unloaded, not only at various places along the southern shore of Lake Erie, but also at cities on southern Lake Michigan. About four-fifths of all the iron ore shipped on the Great Lakes comes to *Lake Erie* ports. A study of Cleveland, the largest of the Lake Erie ports, gives one an idea of the chief kinds of work done in most of them, for these ports are alike in many ways.

In Figure 242, you see part of the outer harbor of Cleveland. In what direction is the lake from Cleveland (Figs. 207 and 227)? In what direction, then, are you looking in this picture? In what ways is this view like that of Weehawken in Figure 12? What, then, would you call these piers? Why? Find on the piers three machines for handling coal. They may suggest anthracite to you, but ore boats are not loaded with anthracite in Cleveland. Name a city in the heart of the anthracite district. Is Cleveland as near this city as Buffalo is? On the map in Figure 207, find Pittsburgh. From Figure 171, find what is mined near Pittsburgh. Which is nearer Cleveland, Scranton or Pittsburgh? Part of the coal loaded on lake vessels at Cleveland and at other Ohio ports comes from mines near Pittsburgh. Find in Figure 171 parts of Ohio, West Virginia, and eastern Kentucky where coal is being mined. Which kind of coal is mined in these districts? Some coal from them, too, is shipped through Lake Erie ports. Tell one reason you now have found why the machines in Figure 242 load bituminous coal instead of anthracite. A large part of this coal goes to Duluth-Superior and other Lake Superior ports. Lake Michigan ports, too, receive much of it.

West of the piers shown in Figure 242, too far to the left to be seen in this picture, there are terminals at which iron ore is unloaded. Grain, lumber, and package freight also come by lake to Cleveland, but more than nine-tenths of all that is brought there by boat is iron ore, and more than nine-tenths of all that is shipped away by boat is bituminous coal.

Glimpses of Cleveland. — Figure 243 shows part of Cleveland's inner harbor, or river harbor. Find the place where the river enters the lake. Just east of this place, to the right, are the terminals you saw in Figure 242. Notice the very long, high bridge built across the river valley. Can you find in Figure 227 the part of Cleveland shown in this picture? If you were to stand on the high-level bridge and to look along the river toward the lake or, turning round, were to look up the valley, you would see in either direction a smoky region of railroads and factories. Among them are blast furnaces which use part of the iron ore that is brought to Cleveland. In Figure 172, you saw such furnaces. In them iron is melted out from the iron ore. This melted iron may be cooled in moulds, called "pigs," to make "pig iron," or it may be carried before it hardens to other furnaces in which "wrought iron" or steel is made from it. The part of the river you see in Figure 243 has been deepened so that large boats can enter it. What do you see about the river, however, that makes you think it would be hard for a very long boat to come upstream?

In many Cleveland shops and factories which do not make iron and steel, these

Figure 243

By courtesy of the United States Army Air Service

products are used in manufacturing other things such as wire, machinery, automobiles, stoves, tools, and hardware. Although there are clothing factories, slaughtering and meat-packing establishments, and factories of many other kinds in Cleveland, the iron and steel made there, together with the products made in turn from them, are worth about half of everything that is manufactured in the city. The following exercise will aid you in seeing why iron and steel are made in Cleveland and in various other lake cities along the route from Buffalo and Cleveland to Chicago.

Exercise. — On the outline map on which you drew the routes from New York to Chicago, color red the places near the shores of Lake Superior and the northern end of Lake Michigan where iron ore is mined (Fig. 42). Make two dots on the map for Duluth and Superior. Be sure you put each dot in the state in which it belongs. With the map in Figure 171 before you, color gray on your outline map the coal-producing districts in western Pennsylvania, West Virginia, eastern Kentucky, Ohio, Indiana, and Illinois. Coal from mines in these districts and iron ore from mines near the shores you have colored red are brought together to be used in the making of iron and steel. It is very convenient to bring them together at places *where railroad routes from the coal-mining districts meet lake routes from the ore-shipping ports.* These routes meet along the —— shores of Lake —— and Lake ——. On your outline map, draw red lines to show the routes iron ore boats follow from Duluth-Superior to Chicago and Gary, Toledo, Cleveland, and Buffalo. With the help of the map in Figure 207, draw blue lines showing railroad routes from the coal-producing districts to these ports. One reason you find iron and steel mills, then, at Buffalo, at Chicago, and at various lake ports between, is that these ports are convenient meeting places for —— and ——.

Can you name now some kinds of things made in Cleveland that you think might be sent to New

Figure 244 © Hamilton Maxwell

York City by way of Buffalo and the Mohawk Valley? Will various iron and steel industries now be suggested to you by some of the ports on the southern shores of lakes Erie and Michigan?

What new reasons have you found why so many people find work to do in the northeastern part of the United States (p. 173)?

Toledo. — From the following statements, find ways in which Toledo resembles other Lake Erie ports. Tell, in each case, which of the other ports is suggested to you. (1) Toledo is at one end of Lake Erie, where many trains meet lake boats. (2) A river forms its inner harbor. (3) Much bituminous coal is shipped from it, and iron ore for use in several Ohio cities is received there. (4) Its manufactures are varied, but the making of machinery and of machine-shop products is its leading work.

An "automobile city." — If, instead of going south of Lake Erie on your journey from Buffalo to Chicago, you were to go north of this lake, you would pass through Detroit. Find on the map of Detroit in Figure 227 the heart of the city, near the northwest bank of the river which connects lakes St. Clair and Erie. In Figure 244, you are looking from the river across this part of the city. Compare the picture with the map of Detroit in Figure 227, and tell in what direction the camera was facing. What kinds of buildings do you recognize here? Do you think iron ore and coal in great amounts are unloaded at the docks

Figure 245 © Keystone View Company

shown in the picture? Why, or why not? Although many ore boats, as you know, pass Detroit with their cargoes of iron ore and coal, few of them unload their cargoes there. Notice the many cars of coal near the docks. Coal comes to Detroit largely by rail instead of by lake. Do you see why? Think of the work of loading and unloading boats, and notice the distances by lake from Cleveland and Toledo to Detroit. Much of the freight which goes to or from Detroit by lake is shipped on vessels that carry both passengers and freight. During the open season, such boats are run daily between Detroit and Buffalo and between Detroit and Cleveland.

Detroit is a city of many industries, but more than a third of all the factory workers in the city are engaged in helping to make automobiles. More automobiles are made here than in any other city in the world. What are some of the materials that are used in making automobiles? For an automobile factory, then, you would choose a place to which these materials can be brought conveniently and from which cars can be shipped readily. You have seen that iron and steel, two of the heavy materials needed, are made in several near-by cities. Some, indeed, is made near Detroit by one of the great automobile companies. On the map in Figure 207, find rail and water routes over which freight may be sent to and from Detroit. However, other places, not so famous for automobiles as Detroit, also have these advantages. Detroit had in addition an early start in this industry. Moreover, some of the early companies that made automobiles there were very successful, and soon other men decided it would pay them, too, to make cars in Detroit. As more factories of this sort were started, more and more men in Detroit became skillful in the work of making cars. In turn, it became easier for manufacturers to find good workmen there for more such factories. So Detroit grew to be the greatest automobile center.

Across southern Michigan. — On the map in Figure 207, follow across southern Michigan the route of the railroad from Detroit to Chicago. The picture in Figure 245 was taken near this railroad, in a district famous for its celery. The boards were put along the rows of celery in order to blanch the stalks. Notice the tree-covered slope beyond the field of celery. You could see many other rolling, wooded lands as you crossed the state.

From a study of southern Michigan as shown on the maps in Figures 29, 92, 100, 101, 103, 104, 105, 106, 107, 108, 109, 128, 159, 160, 213, 214, 217, and 218, make a list of other farm scenes which you think you might see from your car window during your trip across the state. From the map in Figure 160, find the part of southern Michigan in which much land is used for growing fruit. The dots on the map in that district stand for fruits of the kinds which you saw in western New York state near lakes Erie and Ontario. In what way is the location of this Michigan "fruit belt" like that of the one in western New York? How does this fact help you to explain why so much of the land in the part of southwestern Michigan which is near the lake is used for growing fruit (p. 193)?

A "roundabout" trip from Detroit to Chicago. — If you wished to see more of Michigan than you could see along the shortest route from Detroit to Chicago, you might go around the northern end of Lake Michigan instead of around its southern end. The following suggestions will help you to imagine this "roundabout" trip.

Figure 246 *By courtesy of the Grand Rapids Association of Commerce*

Michigan's second largest city. — In Figure 207 find the signs for the city of Grand Rapids and a railroad from Detroit to that city. The river which flows through Grand Rapids is the Grand River. Part of the city is shown in Figure 246. What kinds of buildings do you see along the river banks? Does not the name of the city suggest to you *one* reason why a manufacturing city has grown at this place? If so, what reason?

If you were near the factory buildings along the river you could read on one the name of a firm which manufactures carpet sweepers, on another the name of a company that makes chairs, and on others such words as "Office Furniture," and "Upholsterers." You would find that the making of furniture of various kinds is by far the most important industry of the city. Indeed, with the exception of New York and Chicago, Grand Rapids leads all other cities of the United States in the manufacture of furniture. What have you learned about northern Michigan (p. 173) that suggests another reason why Grand Rapids was a good place in which to *start* furniture factories?

To the Straits of Mackinac. — Find in Figure 207 the strait between Lake Michigan and Lake Huron. Find a railroad which runs from Grand Rapids to this strait. Along this route you would see some farms much like those in the southern part of the state. On the dot maps which you studied in connection with southern Michigan, notice, however, how the dots that stand for the acreage used for various crops thin out toward the north. Notice how in Figure 29, on the other hand, the dots become much more numerous toward the north. You would pass through thousands of acres of land somewhat like that shown in Figures 209 and 210.

As you saw (1) vast wastes of unused, cut-over land, (2) an occasional lumber camp where cutting still is going on, (3) deserted farm houses that tell the story of unsuccessful attempts to cultivate these lands, (4) successful farms here and there where soils are good, (5) fields bordered by somber fences of tree stumps that have been pulled from patches of land in order to clear them for farming, and (6) various towns which show signs of better days, you could not fail to realize that you were in a land where a great change has taken place. Michigan, once the leading lumber-producing state, now is surpassed by fifteen other states in the production of lumber. Grand Rapids now must get much of the lumber to be used in its factories from other states. One of Michigan's serious problems is to find how best to use its cut-over lands.

The great logging operations of earlier years, of which you could see so many signs along your railroad trip north from Grand Rapids, were carried on largely in the winter time. Can you explain this fact (p. 106)? From the forests in the interior of the peninsula, thousands of logs were floated each spring down all the larger streams which flow eastward to Lake Huron or westward to

By courtesy of the International Harvester Company

Figure 247

Lake Michigan. At the mouths of these rivers (Fig. 207), busy towns developed at which the logs were manufactured into lumber, and from which the lumber was shipped on lake boats. As the supply of timber became less and lumbering as a result decreased, some of these towns lost many of their people. Does this not remind you of what you read about " short-lived towns " (p. 70)? Others of them, able to develop new lines of trade and of manufacturing, have continued to grow. Some of them on the west shore of the peninsula have become summer resorts, and some benefit by their nearness to fruit-growing districts.

Through the northern peninsula of Michigan. — Find in Figure 207 a railroad extending from the northern side of the Straits of Mackinac to Milwaukee, in southeastern Wisconsin. After ferrying across the strait, you might go on this railroad to Milwaukee. The scenery along this route through " upper " Michigan is much like that in the northern part of " lower " Michigan, but you might see in addition some signs of the kind of work which the map in Figure 42 suggests. You might pass, for example, cars of iron ore coming to a lake port on the southern coast of the peninsula from some mine in its interior. Upper Michigan sometimes is called " Cloverland," because in many places cut-over lands there are being used for clover and for other hay and pasture plants.

Through Wisconsin farm lands. — Although farther west in northern Wisconsin there are cut-over lands much like those of northern Michigan, most of the part of Wisconsin through which you would travel on the way to Milwaukee has long since passed through the stage suggested by the picture in Figure 247. Eastern Wisconsin is, on the whole, a rolling country of prosperous farms such as you see in Figures 2 and 248.

By comparing the maps in Figures 100, 101, 102, and 103, how do you think the amount of land used in eastern Wisconsin for the growing of oats compares with the amount used for the raising of corn? Of wheat? Figures 108 and 109 show that much land there is used for two other grains. What are they? From Figures 2, 104, 105, 213, 214, and 215, name a special kind of farming which you think you would see there. Would you expect, then, to see much or little land in meadows and pastures? How are the comparatively cool summers of this district, its abundant rainfall, and its nearness to large cities favorable for this kind of farming? Wisconsin is, indeed, the leading dairy state. In the last census year, it ranked first in the number of dairy cattle, first in the total value of all dairy products, and it produced almost four times as many dollars' worth of cheese as did any other state in the Union. By comparing Figures 214 and 215, notice that cheese factories are not most numerous in the parts of Wisconsin in which butter factories are most numerous. Most of the butter factories are in parts of the state where corn for silage grows well. The cheese factories have been established where the summer weather, especially at night, is cool, and where the growing of corn is less important. Most of the milk and cream sold by dairy farmers in southeastern Wisconsin is shipped to near-by city markets. Some of it is sold to factories where condensed milk is prepared. The rapid growth of dairying in Wisconsin in recent years suggests that this work is well suited to conditions there. Moreover, some farmers prefer dairy farming to grain farming in part because it supplies products for sale daily and provides about the same amount of work in winter as it does in summer.

Of course, there is winter work to be done on other kinds of Wisconsin farms, too. In Figure 249, for example, you see a manure spreader in use. Do you remember the mention of this kind of work in connection with farming in Iowa (p. 94)? The poultry house at the left end of the group of farm buildings suggests another kind of winter as well as summer work.

From the map in Figure 160, do you think that you could see more fruit orchards near the western shore of Lake Michigan than you could see near

Figure 248 *By courtesy of the International Harvester Company*

Figure 249 *By courtesy of the International Harvester Company*

its eastern shore, or not so many? Do you not wonder why this is true? One reason is the difference in soils near the two shores. Moreover, since most of the winds of both districts are westerly winds, the influence of the lake in tempering the weather (p. 101) is somewhat greater on the east side of the lake than in most places on the west side.

Examine again all the dot maps in the foregoing pages and make a list of any additional facts about work or uses of land in Wisconsin and Michigan which you can find from them. If there are any questions which these facts raise for you, list them also, and see if the rainfall and growing-season maps suggest answers to some of them.

Wisconsin's largest city. — Figure 250 is an airplane view of part of Milwaukee. In what direction is Lake Michigan from the city? In what general direction, therefore, are you looking in this picture? The long white " line " in the upper left corner of the view is part of the breakwater which protects the outer harbor. The wharves are along the canals and parts of rivers which form the inner harbor. Near the upper right-hand corner of the picture, find the entrance to the inner harbor. Among the buildings in the foregound are two meat-packing plants. In the central right-hand part of the view are the yards and buildings of several fuel companies. Can you find the long pile of coal in one of these yards? Here and there along the shores of the inner harbor you could see other coal yards, and railroad yards, lumber yards, tanneries, warehouses, factories of various kinds, and grain elevators. Iron ore is unloaded at one dock. Does not the harbor of Milwaukee remind you of some other lake harbors you have visited? If so, of what ones, and in what ways? Notice, for example, the many turns in the waterways and compare their widths with the lengths of the larger boats. Do you not think large boats would meet in this harbor difficulties similar to those which they encounter in the winding river at Cleveland?

Shipping and manufacturing. — From what Lake Erie ports of which you have read do you think coal probably is shipped to Milwaukee? Notice on the map in Figure 207 the principal railroads which connect Milwaukee with various other parts of Wisconsin. After thinking of the facts you have

© *Aërial Photo Service*

Figure 250

read about this state, make a list of products which you think might come from Wisconsin farms and villages to Milwaukee to be used there or to be shipped by boat or by train to other places. Remember, too, that farmers need fuel, gasoline for their automobiles and engines, farm machinery, foods that they do not raise, and factory products of various kinds. How do these facts help you to explain why thousands of people in this city are engaged in collecting and distributing many kinds of goods?

In *amount*, the largest item by far that is received by water is bituminous coal, as you might expect, while anthracite is second. The *value*, however, of the general package freight received is greater than that of all the coal. Water-borne freight comes not only in lake vessels, but also in cars which are ferried across Lake Michigan. Among other materials received are iron and steel manufactured products, automobiles, paper, wood pulp, salt, and iron ore. By weight, grains and flour are the leading items in water-borne *shipments*. By value, package freight leads. Among other articles shipped away are meats, dairy products, and automobiles. Are any of the facts about Milwaukee's lake trade surprising to you? In each case tell why, or why not.

From your study of Figure 250, you learned of several kinds of factories in Milwaukee, but of course you could not tell from the picture which are of large importance. If the kinds of manufacturing done in the city were listed in the order of the value of their products, you would find among the first five the tanning and finishing of leather,

meat packing, the manufacture of shoes, and the making of knit goods, such as hosiery. As in other large manufacturing cities, the full list would be a long one. What facts have you learned about the city and about the state of Wisconsin which help you to explain why Milwaukee's manufactures are varied?

Hereafter, what "picture" will be suggested to you by the mention of Wisconsin's largest city?

A striking map. — On a blank outline map of the United States, put in Minnesota a dot which will stand for Minneapolis. Be careful to place it correctly. Put on the map a dot which will stand for Toledo, Ohio. Draw between these two dots a line to show what seems to you to be the *shortest* distance *by land* between Minneapolis and Toledo. Add to your map dots for Milwaukee, Wisconsin, and Atlanta, Georgia, and draw a line for the shortest distance by land between them. In a similar way show the shortest distances by land between (1) Duluth, Minnesota, and Charleston, South Carolina, (2) Bismarck, North Dakota, and Buffalo, New York, (3) Pierre, South Dakota, and Scranton, Pennsylvania, (4) Omaha, Nebraska, and Grand Rapids, Michigan, (5) Butte, Montana, and Rochester, New York, (6) Cheyenne, Wyoming, and Detroit, Michigan, (7) Boise, Idaho, and Providence, Rhode Island, (8) Spokane, Washington, and Albany, New York, (9) Portland, Oregon, and Portland, Maine, (10) Salt Lake City, Utah, and Flint, Michigan, (11) Denver, Colorado, and Lansing, Michigan, and (12) St. Paul, Minnesota, and Baltimore, Maryland. You probably discovered before you drew the last of these lines that each of them crosses others near the same place. Where is this place? Why *must* they cross there? You might have drawn many other similar lines, but do you not see from this exercise that such lines, if drawn from *any* point in Wisconsin or in any state due west of Wisconsin to *any* point in states east or northeast of Lake Michigan would *have* to pass near the southern end of this lake? Does not this exercise lead you to expect to find a great railroad center near the southern end of Lake Michigan? Such a center has developed there. On the map in Figure 23 find this great railroad city. What is its name?

The world's greatest railroad center. — Does not the map in Figure 23 make you wonder (1) why Chicago has developed where it has rather than at the *southernmost* end of Lake Michigan, and (2) why railroads come to it from the South and Southwest as well as from the parts of the United States mentioned in the foregoing map exercise? Even if railroads came to Chicago from *only* the northwestern and northeastern parts of the United States, it would be an important railroad center. An important railroad center is a good trading center. Why? Chicago is, moreover, a lake port, and can receive and ship freight not only by land but also by water. Railroads from the South and Southwest profit greatly by coming to a city where the conditions for trade are so favorable. Furthermore, in the part of the United States between the Rocky Mountains and the Appalachians, there are few serious barriers for men to overcome in building railroads. Since much of the Interior is almost level or gently rolling, railroads can be built in many parts of it in one direction with as little difficulty as in another. There is demand in Chicago, and in many other places which are served by Chicago, for products from the South and Southwest. There also is demand in southern and southwestern states for materials brought to Chicago from northern states. The very fact that many railroads enter a city tends to make that city a desirable terminus for other railroads. You should now be able to state four of the reasons why Chicago has become so great a railroad center. The following paragraphs about the city doubtless will suggest to you answers to the first question.

A wide-spreading city. — Figure 251 is an airplane view looking northeast across the "downtown" district of Chicago, toward the outer harbor. As in the case of Milwaukee, the outer harbor is little used. The long pier extending into it is owned by the city and is called the "Municipal Pier." Its outer end is used for amusement purposes. Do you think it is a good place for "play"? Why,

© Chicago Aerial Survey Company

Figure 251

or why not? Can you find, just south of the pier, the entrance to the Chicago River? The stream in the foreground is the south branch of the river. One of Chicago's two inner harbors consists of the Chicago River and its branches. Find the river and its branches on the map of Chicago in Figure 227. By comparing the map and the picture, do you see that the picture shows only a small part of the city? Notice that all the maps in Figure 227 are drawn on the same scale. How does the ground space which Chicago occupies compare with that of each of the other cities mapped there? More people live in Chicago than in any other city of the United States except New York. Moreover, the city is built on almost level land where it has plenty of room in which to spread. Would you not expect the city, then, to cover much ground?

A summer visit. — If interested chiefly in its harbor activities, you should visit Chicago in the summer. Tell why. You would find that Chicago's trade by water is small in comparison with its trade by land. Along the shores of the river, you would see many wholesale establishments and warehouses. Can you find some of these in Figure 251? Do you see that they are conveniently near railroads as well as the river? The most valuable item of the water-borne trade is package freight. A large part, by weight, of the lake shipments from the city consists of grain, principally corn and wheat. As you would expect, then, elevators stand here and there along the river front. Following to the southwest the south branch of the river and the canal which it joins, you would see great lumber yards, coal yards, more railroad yards, and factories of various kinds near the banks. In earlier days, most of the lumber received at Chicago came by boat. Part of it was shipped away by water, too. Much lumber was needed in the prairie settlements west and southwest of the city,

and before the coming of the railroads to Chicago a canal was dug which joined the Chicago River with the Illinois River (Figs. 207 and 227). Lumber which lake boats brought to Chicago was shipped by canal boats to towns along the canal, the Illinois River, and the Mississippi River, and was distributed from them. Do you not see, then, one reason why it was convenient to have lumber yards near the Chicago River or the canal? Later, a larger canal called the Drainage Canal was dug along the route followed by the old canal and by several railroads. The lumber yards along the river and canal are now as convenient to these railroads as they are to the waterway, and in recent years lumber is received and shipped mostly by rail. Railroads also handle most of the coal which is shipped into and out of the city.

Notice in Figure 251 the bridges across the river. Are they many, or few? Do you see how they make the use of the river by freight boats somewhat difficult? Partly because of the delay caused by these many bridges, much of the bulkier freight now is handled in the harbor in the southern part of the city. Find this harbor on the map in Figure 227. Great elevators recently have been built near it, and much grain now is shipped from them. Millions of tons of iron ore and much limestone are received at the southern harbor. From the Municipal Pier, or from one of the very tall buildings near the lake (Fig. 251), you might watch the loaded ore boats from the upper lakes go past the entrance to the Chicago River and on to the southward. If you were to go to the southern harbor to watch some of these boats being unloaded, you would see before you reached it the tall smoke stacks and blast furnaces of the iron and steel mills which use the ore. You already have seen reasons why Chicago is among the important iron and steel manufacturing cities. What reasons can you give?

From Figure 227, find what public use is made of some of the land along the Chicago lake front. Do you see why some parts of the city near the lake shore have been chosen for this use? What have you learned about the size of the city, however, which helps you to explain why some lands away from the lake are also needed for this use? On a day that was bright and hot, as some summer days there are, you probably would find the Municipal Pier, the parks, and the bathing beaches crowded with people trying to escape the heat. Off shore the sails of pleasure boats add to the scene. On cool days you would find fewer people in these city playgrounds. It is interesting in all kinds of weather to watch the steady stream of automobiles that move along the wide boulevards, for they tell a story of Chicago similar to that which your railroad maps tell. On a single day you might see cars from more than half the states of the Union, and in the course of a summer one sees cars from *every* state in the Union. Can you tell the "story" which these automobiles suggest?

You now have seen two important ways in which the lake serves the city of Chicago. Off shore you could see signs of a third way. Here and there, some distance from the land, there are buildings in the lake which you might at first mistake for large boats. These are the "cribs," or "intakes," from which lake water is pumped to supply the needs of the vast city. Had it ever occurred to you that hundreds of thousands of people could not live together in a place in which there is not an abundant water supply? Do you see why the cribs are not close to the shore? The city has had to meet a more difficult problem in disposing of its sewage. Do you see why it would be dangerous to put the sewage into the lake? If it were put into the river, where would you expect it to go? In order to prevent this, men have changed the slope of the bed of the river so that water flows through the river channel

Figure 252

© Chicago Aërial Survey Company

from the lake, not into it. The sewage also flows through the river channel into the drainage canal (Fig. 227), and thence into the Illinois-Mississippi river system. The water in the river, then, flows in a direction which once was upstream but which, of course, is down slope.

A winter visit. — One of the events which attract many winter visitors to Chicago is the International Livestock Exposition, which is held there each December. If you were to visit the city then, you might find the weather pleasantly crisp but not severely cold. As in other parts of the northern interior, however, the weather is subject to frequent and at times sudden changes, and it might be so cold as to interfere with the shipment of stock for a few days. At this exhibit, excellent stock from many states is displayed, and prizes are awarded for the best animals of the various classes shown. With the aid of the maps in Figures 23, 92, 105, 106, and 107, tell why this is a good city in which to hold such an exhibit. From what states would you expect *much* stock to come?

Not only at the time of the International Livestock Exposition, but daily throughout the year stock arrives at Chicago in great numbers. For the same reasons that the city is a convenient stock exposition center, it is convenient for the marketing of stock. In almost every large city, as you have seen, some slaughtering is done. Chicago, however, leads all other cities of the world in the slaughtering and meat-packing industry. What facts have you now learned about the city that aid you in explaining this? Figure 252 is an airplane view of the Chicago stockyards. They are, as you might expect, in the western part of the city. There they are easily reached by railroads, and yet occupy land which is not so valuable for other purposes as that in and near the downtown dis-

Figure 253 *By courtesy of the International Harvester Company*

trict. They cover, as you can see in the picture, several city blocks. They are divided into hundreds of pens, and thousands of animals can be handled at one time. In the foreground are the buildings of several of the large packing companies. Thousands of men and women are needed in these packing plants, for there is much work of many kinds to do. Not only are hams, bacon, canned meats, and the like prepared, but use also is made of bones, hoofs, and other parts of the animals in the making of buttons, knife handles, glue, and many other articles. Near the yards are crowded the tenement homes of most of the workers. Indeed, the yards, packing houses, and homes together form a small city within the great one.

Although meat packing is Chicago's greatest manufacturing industry, there are other interesting market places and factories to see. You might go, for example, to one of the large buildings shown in Figure 251 where you could watch men buying and selling grain. Only small samples of grain are to be seen there, but thousands of bushels often are bought and sold in a few minutes, and many telegraph and telephone wires are kept busy reporting these purchases and sales to various parts of the country. Since this is the leading grain market in America, the prices paid there affect prices elsewhere, and so the latest news from the Chicago market is eagerly awaited in many places. The facts you already have learned about Chicago and the dot maps showing the distribution of grain crops should suggest reasons for Chicago's importance as a grain market.

You have seen how some of the products from farms in many states are brought to Chicago. In Figure 253, you see a group of great factories whose products are to be shipped to farms far and near. Binders, threshers, and other farm machinery are made here. This plant covers more than a hundred acres of land in the western part of the city. Notice the piles of lumber beyond the nearer buildings. They suggest one use for lumber which is brought to Chicago. What other material used in the making of such machinery is made in Chicago? What other reasons do you see for the fact that Chicago leads all other American cities in the making of farm machinery?

Visits to all the important markets of Chicago and to all of its manufacturing plants would require much time. There are, for example, large furniture factories, and furniture exhibits are held in January and July. In the southern part of the city there are plants where Pullman cars are made. As one goes from part to part of the vast city, through the various clusters of factories and the different business and residence sections, Chicago seems to be a collection of many cities.

Figure 254 *By courtesy of the International Harvester Company*

Has not the discussion of the river and its relation to the Illinois-Mississippi system suggested to you two reasons why Chicago grew where it is, instead of at the southernmost end of the lake? Do you not see, too, why the heart of the city is near the old entrance of the river into the lake?

The heart of the city. — To many visitors, at whatever season they come, the most interesting part of Chicago is, after all, not the harbor nor any one of its numerous factory districts, but the downtown district itself (Fig. 251). Structures which in many cities would seem tall are low among the giant office buildings which in places line its streets. The throngs of cars and people that daily swarm these man-made "canyons" are in themselves a source of never ending wonder. The mammoth retail stores, some of them among the greatest in the world, are a delight to shoppers. It is not to be marveled at, then, that each day railroads bring from far and near not only much freight but also great numbers of people to such a center. On the other hand, it is largely because there *are* these railroads that such a city exists.

Scenes in Illinois and Indiana. — In Figures 208 and 254, you see farm scenes in Illinois and Indiana. All the farm machinery which you see in use in these views was made in Chicago. From these pictures, tell what products you think might go from these farms to Chicago or to some other market city. Notice the silo. What farm products besides corn does the silo suggest to you? The pictures and descriptions of farm lands on pages 92–94 and 96 and the drawing in Figure 25 fit many Illinois and Indiana farms as well as those of Iowa. The scenes which a little girl chose to show in pictures to be taken near her home (p. 26) were scenes in central Illinois. By thinking of what these pictures and descriptions and this drawing tell you, and by looking carefully at Illinois and Indiana on the map in Figure 207 and on all the maps to this point in the book which show distribution of crops, animals, people, rainfall, forests, and minerals, you should be able to "picture" the kinds of lands through which you would pass in crossing these states. How many cities in Illinois do you find named on the map in Figure 207? Are there more than 100,000 people in any of them

Figure 255 *By courtesy of the Illinois Steel Company*

besides Chicago? What does the map in Figure 120 show about the number of smaller cities in Illinois? On the return trip from Chicago to New York City, you would not pass through any of the larger Illinois cities. They are, as you should expect, " railroad center " cities in which trade and manufacturing similar to that which you have seen in other " corn belt " cities are important.

Routes from Chicago to Pittsburgh. — With the aid of the map in Figure 207, put on the outline map on which you drew routes from New York City to Chicago dots for Indianapolis, Indiana, for Pittsburgh, Pennsylvania, and for Cincinnati, Dayton, Columbus, Akron, and Youngstown, Ohio. Notice that each of these cities has more than 100,000 inhabitants. Notice, too, that the most direct railroad route from Chicago to Pittsburgh does not pass through any of these cities. However, you might plan your return trip along a route that passes through all of them. Show on your outline map a railroad route you might follow if you were to go from Chicago by way of Indianapolis to Cincinnati, from there northeast through Dayton and Columbus to Akron, thence east to Youngstown, and finally southeast to Pittsburgh. In what ways would you expect the cities along this route to resemble the lake ports you have visited? To differ from them? As you read about scenes along this route, try to find *striking* facts about each of the larger cities along the way, and as many reasons as you can for the kinds of work which you see. Then think how these " scenes " and " reasons " aid you in explaining why there are so many cities and people in Northeastern United States (p. 173).

Some Indiana cities. — After leaving Chicago proper, you would pass through several cities near the southern shore of Lake Michigan which are so close to one another that in places it is difficult to tell where you leave one and enter the next (Fig. 120). Scenes such as that in Figure 255 suggest the chief work of the district. You might see in one of these towns acres of oil tanks like those in Figure 140, and many tank cars in the railroad yards. Petroleum from various fields is refined there. On the map in Figure 43, find pipe lines which lead from oil fields to this district. What advantage for distributing petroleum products has a place so near to Chicago? In Figure 255, you see some of the iron and steel mills at Gary. Think again of the reasons you have found why the district along the southern shore of Lake Michigan is a convenient one in which to make iron and steel. " Slag," the waste product of blast furnaces, is used in great cement mills near Gary. These mills produce almost a tenth of all the cement made in the United States. Since these manufacturing cities of northwestern Indiana are near Chicago, and since the same facts which explain some of Chicago's industries explain their leading industries, they sometimes are together described as " Chicago in Indiana," or as a part of " Greater Chicago."

Indiana's capital and largest city. — In the foreground in Figure 256 is shown the part of Indianapolis where your railroad journey to that city would end. What do the many tracks, cars, and train sheds there suggest to you? Beyond, a little above and to the right of the center of the picture is the tall monument which marks the very heart of the city. From the " circle " in which it stands, broad streets run not only north, east, south, and west, but also northeast, southeast, southwest, and northwest. Perhaps you can find in the upper left-hand part of the picture the street which extends northwest from the circle, cutting diagonally across many other streets. Does not this regular street pattern lead you to think that the

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Figure 256

city probably is built on almost level ground, and that these streets were carefully planned?

Find in the picture to the west (left) of the circle a large building which stands in spacious grounds. Its tallest part is surmounted by a large dome. This building is the state capitol. The capitol and the railroads have had much to do with the growth of Indiana's largest city. When Indiana became a state, more than a hundred years ago, Indianapolis did not exist. Some four years later, the land on which the city stands was chosen as the site for the capital of the state, and before the city was started plans for its streets were made by experts. This particular place was chosen partly because the ground there is almost level and because it is near the center of the state.

Later, many railroads were built to Indianapolis from various directions. This was natural because (1) it is the capital, (2) it is centrally located in a state which lies between important eastern centers of trade and some of those farther west, and (3) it is in a section whose farms, mines, and towns furnish much freight. Now every county in Indiana excepting three can be reached by train from Indianapolis in less than a day.

The capitol and several of the more important structures of Indianapolis are built of Bedford limestone, which is quarried on a large scale in the southern part of the state. This stone is such excellent and attractive building material that it has been used in many large cities for some of the better buildings.

You can see, of course, that such a collecting and distributing center as Indianapolis has advantages for manufacturing.

Figure 257 *By courtesy of the United States Army Air Service*

even though, unlike most of the great manufacturing centers of the country, it is not on a navigable body of water. Meat packing and the making of automobiles are among its more important industries, but the great number of kinds of factories is more striking than is the importance of any single kind. Indianapolis is, then, not only a *capital* city, but also a *railroad* city, and an *industrial* city.

Cincinnati. — When you made on your outline map a dot for Cincinnati, did you notice that the city is near the northernmost point of a great bend of the Ohio River? In the days of active river trade, Cincinnati benefited from this fact just as Nashville did from its position on the bend of the Cumberland River (p. 164).

If you were to go to the park partly shown in the upper left-hand part of Figure 257, and were to climb the steps to the top of the tall water tower which stands in it, you could see that much of Cincinnati is on a platform, or *river terrace*, between the Ohio and the northern bluff of the river valley. The valley bluff forms a semicircle of high, wooded hills that partly enclose the city. There is a narrow lowland strip between the river and the terrace. Looking southwest from the water tower, you would see tall buildings of the main business district, part of which appear in the foreground of the picture. From the tower you also could see (1) some of the bridges which span the wide river between Cincinnati and the Kentucky shore, (2) Kentucky cities along the southern bank, and (3) the mouth of a river which flows into the Ohio from the south.

If you were to go along the northern bank of the river, you would see not only railroads that follow the valley lowlands into the city, and warehouses and wholesale

stores near-by, but also suggestions of river trade. Passenger boats suggest that you might go to Pittsburgh by river instead of by rail. Package freight which you might see being loaded on the passenger boats, and towboats pushing strings of barges loaded with coal, iron ore, lumber, salt, or some other bulky product, show that the railroads do not handle *all* of the city's trade. To reach the main retail business district from the narrow lowland strip, you would have to go uphill, for the terrace is some sixty feet above the river lowland. From the terrace, steeply sloping streets lead in places to the much higher lands of the encircling hills, where many people of the city live. In some places, the slope from the terrace to the hills is so steep that inclined planes have been built on which street cars, automobiles, and other vehicles are raised and lowered. West of the main retail business district you would come to the mouth of a tributary valley, along whose broad, gently sloping floor railroads enter the city by an easy grade through the hills to the north. Following this valley upstream, you would find many factories. Here they not only are near the railroads which enter the city along this route, but also are out of danger of floods which at times cause much damage in the lower land near the mouth of the creek and in the Ohio River lowland. You see, then, that the particular place on the bend of the Ohio where Cincinnati stands has special advantages for a city. Name as many of them as you can.

You should now be so familiar with the sorts of factories found in the larger cities of this region that doubtless you could make without aid a list of some of the more important kinds in Cincinnati. It is not, of course, one of the "iron and steel" cities. Machinery, packed meats, clothing, and shoes are important among its varied products. You may think of Cincinnati, then, as the terraced manufacturing city and railroad center on the outer side of the great bend of the Ohio.

Across Ohio. — From the map in Figure 207, you find that there is more fairly high land in Ohio than there is in Illinois and Indiana. Is not this what you would expect as you approach the Allegheny Plateau? Notice, however, the lowlands that extend across the state from north to south. Notice the directions in which the rivers in Ohio flow. Do you see that in the northern part of Ohio the valleys slope toward Lake Erie, while in the southern part they slope toward the Ohio River?

In much of Ohio you would see farms which, as your agricultural dot maps suggest, are similar to those of Indiana and Illinois. What does the map in Figure 92 show about the use of some of the lands in central and eastern Ohio? The dots on the map are most numerous in the rougher, hillier parts of the state.

Notice that between Cincinnati and Dayton the railroad follows the westernmost of the north-south valley routes, and that, if you were to continue northward instead of stopping at Dayton, you would reach a stream which enters Lake Erie at Toledo. Dayton, then, is on a lowland route between the Ohio River and Lake Erie. Notice, too, that Columbus is in the valley lowland next to the east, that Akron is in the valley lowland which extends southward from Cleveland, and that Youngstown is in the easternmost of the larger lowland strips between the Ohio River and Lake Erie. Each one of the larger cities of Ohio, then, is either on Lake Erie, on the Ohio River, or on a lowland route between the two. Do you see one advantage which points in these parts of the state have for the growth of large cities? If so, what advantage? What materials do you think of first in connection with Lake Erie ports? Would you not expect the Ohio cities along the lowland

Figure 258

By courtesy of the National Cash Register Company

routes leading from these ports to make use of raw materials and manufactured materials which they can obtain from the port cities? Manufactures in the lowland route cities are of course varied, but in all of them foundry work and the making of machine-shop products are important. Do you see how such work is related to the iron, steel, and coal near at hand?

Figure 258 is an airplane view of one of the more important manufacturing plants in Dayton. In the factory buildings shown there, several thousand people are employed in the making of cash registers. Do you see how this work is related to the iron and steel industry? Notice near the factories the homes of the workers. In what ways does this factory district differ from many others about which you have read? What things which you see in the picture tend to make this place an attractive one in which to live and work?

With the aid of Figure 207, name one public building in Columbus and one kind of work which goes on in the city. The capitol there, like that in Indianapolis, is built of limestone obtained from near-by quarries. As in Dayton, machine-shop products rank first in the manufactures of the city. There are, moreover, blast furnaces in Columbus.

Perhaps, in looking at advertisements, you already have learned of some parts of an automobile which are made in Akron. Rubber, of course, has to be brought to Akron from distant lands, but coal, water power, and automobile factories are conveniently near. Just as Detroit had an early start in making automobiles, so the manufacture of rubber goods in Akron was undertaken relatively early and was successful. In the foreground in Figure 259, you can see one group of rubber factories in Akron. In the distance there are others. Now almost half of all the people in the United States who work in rubber factories are in this city, and more rubber goods are made there than are made in any other city in the world.

In Youngstown, there are blast furnaces as well as foundries and machine shops. Do you see how Youngstown's nearness to

By courtesy of the Goodyear Rubber Company

Figure 259

Lake Erie and to Pittsburgh, on the shortest of the lowland valley routes between the lake and the Ohio River, makes it a good meeting place for iron ore and coal?

A check. — What *striking* facts have you now learned about the cities and farm lands which you could see between Chicago and Pittsburgh? Do you not see (1) that manufactures in the southern Lake Erie and Lake Michigan ports and in most of the larger Ohio cities are, in general, of a heavier type than those of New England, and (2) that the map of iron ore routes and coal routes which you drew (p. 202) is helpful in explaining this fact?

"The City of Steel." — In Figure 260, you are looking north over part of the city of Pittsburgh. The river at the bottom of the picture is the Monongahela, the other is the Allegheny. At the left edge of the picture you can see where they join to form the Ohio River. Find the signs for these rivers on the map in Figure 207. On "The Point" between the Monongahela and the Allegheny is the business center of Pittsburgh. What evidence of this fact do you see in the picture? Here are crowded together wholesale houses, retail stores, tall office buildings, hotels, theaters, and railroad terminals. The high lands back from the deep valleys of the main streams are cut by tributary valleys into many hills. The part of the city shown in the picture is comparatively level, but elsewhere the city has spread up the slopes and over the tops of hills that are both steep and high. In certain places there are "inclined planes," built to carry passengers and vehicles and to avoid long, roundabout climbs from lower to higher levels. On one of these you could be lifted quickly some four hundred feet from the level of the lower city to an upper section of the city from which you could look down upon the tops of "skyscrapers" below you. As you should

Figure 260 © Aëro Service Corporation

expect, railroads follow the larger valleys through this rough plateau district, and many lines come to Pittsburgh, at the meeting place of the greater valleys. Notice on the map in Figure 207 the principal railroads which from various directions center upon the city. Notice, too, that Pittsburgh is a " railroad gateway " between the Atlantic seaboard and the Interior. Can you see the railroads and railroad yards along the banks of the rivers in Figure 260? Along these valley highways leading to Pittsburgh, there are almost unbroken lines of factories and factory towns for many miles. Some of these factories and mills have the advantage not only of railroad transportation, but also of river transportation. The lower lands of Pittsburgh, then, along the rivers, are used largely for business and for manufacturing, while upon the breezy hilltops, with their purer air and wider views, are the better residence sections. The streets of the hillier sections, as you might expect, run in many directions. Even in the fairly level section near the end of " The Point," they extend in several directions, as you can see from Figure 260. Can you suggest a reason for this? Notice that some follow the rivers, and that others are at right angles to them. Find on the map of Pittsburgh in Figure 227 the section of the city shown in the picture you have studied. How many of the things shown in the picture are represented on the map?

What facts which you already have learned about Pittsburgh are illustrated by Figure

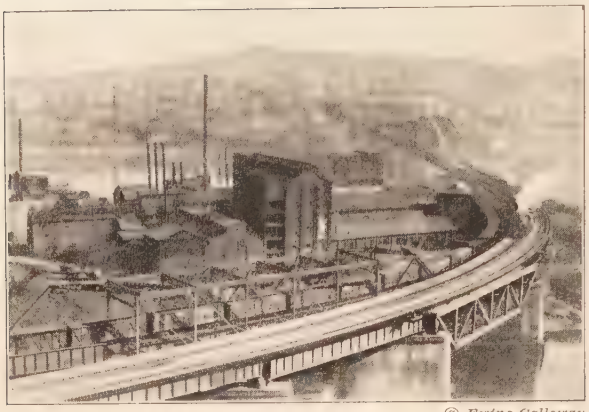


Figure 261 © Ewing Galloway

Figure 262 © Ewing Galloway

261? What kinds of mills do the rows of smokestacks in this view and in that by night shown in Figure 262 suggest? If you could visit Pittsburgh and vicinity, and see in places a whole sky line of great stacks and chimneys pointing like black fingers into smoky skies, you could not fail to realize that Pittsburgh is the greatest of the iron and steel centers about which you have read. It is, indeed, by far the greatest in the world. Some of the facts which you have learned about the making of iron and steel in other places will help you to see why the industry has become so important at Pittsburgh. What are the raw materials needed?

1. In the story of Cleveland (p. 201), you learned that near Pittsburgh there are many mines of what kind (Fig. 171)? Southeast of the city there are deposits of the best kind of coal for use in making coke. Coke, you remember, is "roasted" coal (p. 142). It is coal which has been heated in an oven until all the things, such as gas, which can be separated from it in that way have been driven off. The coke that is left forms an open, spongy mass that will break into large blocks able to hold up a fair weight in the blast furnace and to produce the great heat needed there. On the map in Figure 207, find Connellsville, southeast of Pittsburgh. The Connellsville district produces about half of all the coke made in the United States. Figure 263 shows some of the coke ovens there. Most of the coal mines are along the sides of valleys. Here, then, as in other parts of this highland region (p. 153), the work of streams has made it less difficult and less expensive than it otherwise would be to mine the coal. Railroads which follow the valley bottoms down to near-by Pittsburgh, the great meeting place of the lowland routes, carry millions of tons of coke and coal there each year. Much coal also is received at Pittsburgh by water. The Monongahela River has been improved by the government, and so barges can bring coal from mines which are scattered along its course as far south as northern West Virginia. Of course, Pittsburgh does not use all of the coal and coke brought to it by river and by rail. Some of the coal brought on barges is towed on down the Ohio River to Cincinnati and to other cities, and much coal, as you know (pp. 201, 202), continues by rail to Lake Erie ports. Hundreds of thousands of tons of coal and coke, however, are used each year in the iron and steel mills and the other manufacturing plants of Pittsburgh.

2. What have you already learned which helps you to explain how iron ore can be brought from Lake Superior mines about a thousand miles away to meet Connellsville coke at Pittsburgh? Do you remember how easily much of the Minnesota ore can be obtained from great open pits (p. 103)?

Figure 263 *By courtesy of the Thompson Connellsville Coke Company*

Do you recall how quickly and easily it can be loaded on to boats at such lake ports as Duluth-Superior (p. 197)? Do you remember what great quantities of ore some of these boats carry (p. 195)? How quickly they make the long lake trip to Lake Erie ports (p. 195)? Notice on the map in Figure 207 the principal railroads that connect Pittsburgh with Cleveland and other points near it on Lake Erie. Freight trains that carry coal from Pittsburgh to these ports bring iron ore back. Coke and iron ore, then, can be brought together cheaply at Pittsburgh.

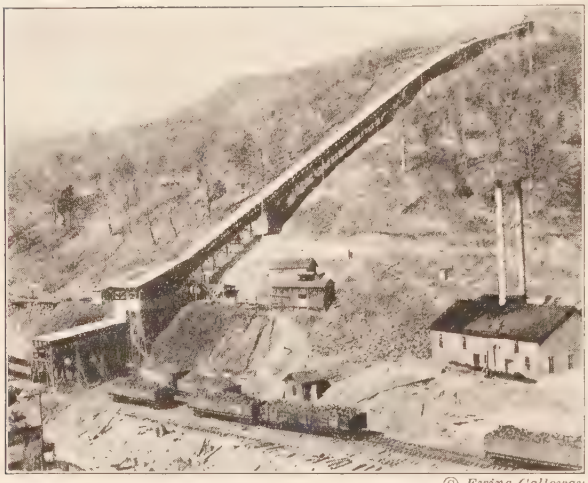
3. Limestone, the third of the raw materials used in blast furnaces, is abundant comparatively near Pittsburgh. Much is obtained from quarries in northern Ohio.

4. Pittsburgh, as you have seen, is a natural railroad center. It not only can readily gather together the raw materials needed by its steel mills, but can readily ship their products to many markets.

5. Pittsburgh had the advantage of an early and successful start in the iron business. You have seen in the case of the automobile industry at Detroit (p. 204), and in the case of several New England industries (p. 188), how helpful such a start may be.

The great iron and steel-making plants of Pittsburgh furnish materials which are used in many other factories of the city in making a great variety of products which range from steel cars and bridges to wire and nails. In or near the city there also are great plants for the making of electrical apparatus, of glass, and of petroleum products. As you can see from the map in Figure 43, pipe lines lead to Pittsburgh from several oil and gas fields. Natural gas for use in furnaces and grates is piped into the city from various directions through several thousand miles of gas pipes. The abundance close at hand of cheap fuel of different kinds has greatly helped the city to develop many industries. Will you not, however, hereafter think of Pittsburgh as above all else "The City of Steel"?

Planning a trip from Pittsburgh to New York City. — In order to see other important cities of Northeastern United States, you might go by train from Pittsburgh to Washington by way of Johnstown, Altoona, Harrisburg, and Baltimore, and then to New York City by way of Baltimore, Wilmington, Philadelphia, and Trenton. Using the map in Figure 207 for reference, make on your outline map of routes through northeastern cities a dot for each of the cities just mentioned which you have not already shown there, and draw lines showing the railroad route suggested. What does the map in Figure 207 show you about the nature of the country you would cross between Pittsburgh and Washington? What does it show about the nature of the country you would see in going from



© Ewing Galloway

Figure 264

Washington to New York City by way of Baltimore and Philadelphia? Name one kind of work which the map shows is done in Harrisburg and in Trenton. What do the agricultural maps in the book suggest to you about scenes in different parts of the route? From the following paragraphs, find all the additional striking or distinctive facts you can about scenes and work and play in the country and cities through which you would pass.

From Pittsburgh to Washington. — In traveling from Pittsburgh to Baltimore and Washington by the railroad route you have marked out, you would cross three distinct kinds of country, as you doubtless noticed in studying the map in Figure 207. (1) From Pittsburgh to the vicinity of Altoona you would be in the hilly lands of the Allegheny Plateau; (2) between Altoona and Harrisburg you would be in the Appalachian Mountains; and (3) beyond Harrisburg you would ride much of the way through the rolling lands of the low Piedmont Plateau (p. 162).

Did you notice that the railroad follows the courses of streams much of the way from Pittsburgh to Harrisburg? The narrow valleys of the Allegheny Plateau along which you would pass afford little room for mines, for manufacturing plants, and for the large population which fringes the railroads. At frequent intervals you pass through towns which fill the valley floor and cling to the steep slopes, the hillside homes standing in tiers one above another. The larger towns have grown where two or more valleys meet and where high-grade coal may be mined. Close to Johnstown, the largest of them, coal, iron ore, and limestone all are produced, and here there are large plants for the manufacture of iron and steel. Here and there along the way you might notice a railroad spur leading from the main line up some tributary valley into the hills. These roads are used to bring out coal. Again you might catch glimpses of mines near the hill tops, such as the one in Figure 264, from which the coal descends in long conveyers to the railroad beside the stream. Most of the hills which you could see from your car window resemble in appearance that in Figure 264. Once covered with splendid timber, they have been cut over and burned over, and now for the most part support only brush and small trees. Only in a few places would you see timber of value. Much of the rougher plateau land of western Pennsylvania can be used best for growing trees, and recently the government has obtained some of it for a national forest. Find this area on the map in Figure 63 (p. 59). You would, of course, see little evidence of farming along the railroad, though many of the less hilly, rolling lands of the plateau are cultivated. Find from the agricultural dot maps what crops are grown there.

The railroad has been built across the steep eastern face of the Allegheny Plateau, called the "Allegheny Front," along a winding route. In this way a slope has been provided up which locomotives can pull the trains. The views which you would have from points along the great "Horseshoe Bend" a few miles west of Altoona are among the more famous in this part of the Appalachian highlands.

At Altoona, much railroad work is done, and the city has grown largely for that

reason. Its railroad yards are more than seven miles long and contain more than two hundred twenty-five miles of tracks. In them you could see long lines of loaded coal cars bound for the Atlantic seaboard and long lines of "empties" on their way back to mining towns in the plateau. Here at the base of the Allegheny Front new trains are made up, and here there are great car-repair shops.

Between Altoona and Harrisburg, your train crosses many mountain ridges and many valleys, one after the other. This ridge and valley belt is a part of the great Appalachian Valley (p. 146). The railroad track is built through the ridges in narrow water gaps. In passing through some of these gaps you could see the stream close at hand on one side of the train and cliffs of jagged rock equally close on the other side. In the valleys, you would see cultivated fields, but the steep mountain sides have been left largely to brush and second-growth trees. Much of the soil is poor, most of the roads are bad, there are few local markets, and, in general, agriculture does not thrive. Your train at length reaches the mouth of the river which it has followed for so many miles in crossing the ridges, continues down the west bank of the Susquehanna River, passes in rapid succession through three of its water gaps cut in as many steep mountain ridges, crosses the shallow, island-dotted river on a bridge about three-fourths of a mile long, and a few minutes later brings you to Harrisburg, the capital of Pennsylvania.

Like Cincinnati (p. 217), Harrisburg was laid out on a river terrace where an early trail crossed the stream. Now railroads lead to Harrisburg from all directions, and help to make it a good place for the state capital and a center for trade and manufacturing.

Between Harrisburg and Baltimore, much of the country is rolling. Most of the slopes are long and gentle and are covered with thick, easily worked, fertile soil. Nearly all of the land is in small, carefully-tilled farms. Do you think the nearness of large cities may help to explain these facts about the farms? If so, how? What large cities are comparatively near (Fig. 207)? Since most of the farms are small, the farm homes are rather closely spaced. In many cases, the houses, some of which are built of stone, and the barns, most of which are large and well built, suggest by their appearance and "style" a farming district that was settled very many years ago. Your train would pass through York (Fig. 207), a thriving city in the center of a rich farming area, through a number of quaint farm villages, and would bring you at Baltimore to the eastern edge of the Piedmont Plateau. A ride of another hour or less would bring you to Washington, forty miles southwest of Baltimore.

The nation's capital. — In Figure 265 you are looking westward across part of Washington, the capital of the United States. Find this city again on the map in Figure 207. On what river is it located? Washington is not in Maryland, as you might think from the map, but rather in the District of Columbia — a small area set apart for it from the state. The beautiful and impressive building in the lower center of the picture, crowned by the lofty dome, is the Capitol. To the right (north) of it is the office building of the United States Senate; to the left, that of the House of Representatives. The third great building near the Capitol is the Library of Congress, which contains the great national library. Directly west of the Capitol, you can see Washington Monument, a marble shaft five hundred fifty-five feet in height, and beyond it in turn, near the Potomac River, the beautiful Lincoln Memorial. The avenue which extends northwest from the Capitol leads to the White House, which you can find near the right edge of the picture.

By courtesy of the United States Army Air Service

Figure 265

These are the more famous structures in a city noted throughout the world for its splendid public buildings. What seems to you most striking about the streets in Figure 265? Is it not the trees by which many of them are almost hidden? In no other large city in America are so many of the streets bordered by lovely shade trees of different kinds. One street may be nearly covered over, for example, by arching elms, another by widespreading maples, and a third by giant oaks.

The surroundings of the city are worthy of the nation's capital. Farther upstream, the Potomac flows swiftly between rocky, wooded banks, but below the Great Falls it makes its unhurried way through the lower lands, past the city, past Mount Vernon, the home of Washington, and on to Chesapeake Bay. Along the river side at the capital stretches Potomac Park, part of which you can see in Figure 265. Behind the city to the north and northwest, beyond the attractive suburbs which fringe the outskirts, is a lovely countryside rich with woods. You could go in a few minutes from the city to a great park, left largely as nature made it, and suggestive of wild woods remote from cities. Few cities are so beautiful as the capital of your country, and few are set in such charming surroundings.

If you were to look out over the city from the top of Washington Monument, as thousands of visitors do each year, you would see no tall, smoking chimneys of industry, no huge warehouses of commerce. Washington has no manufactures of importance, and its trade is merely that which supplies the wants of the city itself. It is the business of the United States government which caused Washington to grow. The government officials and clerks alone number

Figure 266 *By courtesy of the United States Army Air Service*

more than one hundred thousand. They and their families make up the bulk of the population. Thousands more are engaged in work of various kinds required to meet the needs of this great army of government employees. Though it probably never will become an important commercial or manufacturing city, Washington will continue to grow, for as the nation grows the business of the government will increase.

Baltimore. — Find Baltimore again on the map in Figure 207. Notice that it is situated at the head of a short river which flows into Chesapeake Bay. This river, part of which you can see on a much larger scale on the map of Baltimore in Figure 227, forms the harbor of the city. Baltimore is the most southerly of the great commercial and manufacturing seaports of the Northeast, and both by land and sea goods of many kinds are shipped from it to markets farther south.

In Figure 266, you see the heart of the city as photographed from an airplane flying almost three and a half miles above the ground. From such a height even the larger buildings appear tiny, and the picture looks somewhat like a map. This picture-plan of the city resembles a map in another way, for in it you are looking across the city in a direction only a little west of north. Compare the picture carefully with the map of the city in Figure 227. How many things that are shown on the map can you find in the picture? How many kinds of things that you can see in the picture are not shown on the map? Only a map drawn in great detail upon a very large scale could show how all the land of the city is used.

The northwestern end of the harbor, called the "basin," appears at the bottom

Figure 267 © *Ewing Galloway*

of the picture. It reaches to within a few blocks of the business center of the city. Do you think this would be an advantage, or not? Why? The largest ships that come to Baltimore cannot enter the basin, for the water is not deep enough. Farther southeast, beyond the limits of the picture, there are many more piers to which large freighters come from European and from other American ports. Notice in Figure 266 the small stream which flows through the city into the basin. From the upper part of this stream part of the water supply of the city is obtained. Near the northwestern corner of the picture is an artificial lake which is one of the great water-supply reservoirs of the city. Most of the tall buildings near the northwestern corner of the basin are office buildings. Here is the shipping, wholesale, and banking section of Baltimore. Not far beyond, to the west and northwest, there are many department stores and retail shops. The more attractive residence district is in the northern part of the city, west of the small stream. The chief manufacturing quarter is in the southeastern part of the city, beyond the limits of the picture, and near the water front. Do you see any good reasons for this general distribution with reference to the harbor, of shipping, wholesale, retail, manufacturing, and residence districts? If so, what are they? The ground on which most of the city is built is gently rolling, though it seems flat when viewed from the great height at which this picture was taken. Once some of the land was swampy, and in places there were very steep slopes, but the wet places were drained and filled and the heights were rounded off. The advantages of this place were so great that, as the city grew, large sums could be spent to overcome such disadvantages of the land and to improve the harbor.

If you could make a trip along the water front, you would find signs of many of the kinds of trading and of manufacturing that are important in the life of Baltimore. At the piers along the western end of the basin (Fig. 266), you would find steamships that ply to and from towns on Chesapeake Bay as well as more distant points. Close at hand there are large tobacco warehouses. The piers along the northern side of the basin (Fig. 266) are used chiefly for handling general merchandise, vegetables, fruit, and lumber. Figure 267 is a view of the crowded, busy lumber piers. Farther down the harbor, beyond this inner basin, you would find coal piers, grain piers and elevators, piers used by fertilizer companies, by canning and packing companies, by shipbuilding and ship-repair companies, and many others. Still farther down the river, near its mouth, you might visit the piers and mills of a large steel plant. You should be able now to explain why certain kinds of trading and of manufacturing are carried on advantageously in Baltimore. For example, do you see that Baltimore is a natural center to which to ship materials for the making of fertilizers, at which to manufacture the fertilizers, and from which to ship them to the farm lands of the surrounding country where large quantities are needed? Do you see that small boats could easily and cheaply bring vegetables and fruits from the Chesapeake shore lands to canneries in Baltimore, where there is an abundant supply of workers? Baltimore is

Figure 268 *By courtesy of the United States Bureau of Soils*

the chief canning center in the United States. Iron ore brought by sea meets coal from inland mines at the steel works mentioned, whose products can be readily shipped by boat. Do not forget that there are various other products which have not been mentioned that you would expect to be manufactured in Baltimore, just as in all other large cities (p. 120).

From the waters of Chesapeake Bay. — Hundreds of men who live near the shores of Chesapeake Bay are engaged in fishing. Oyster " beds " are numerous in the bay, and oysters are the most valuable product of its fisheries. When oysters are two or three weeks old, they attach themselves to pebbles, shells, or other materials on the bed of a shallow part of the sea and remain fixed there. Oyster fishing is carried on for the most part in places near shore, where the water is less than fifty feet deep, and where great colonies or beds of these shellfish have become established. The methods used in securing them differ, of course, from those used to catch swimming fish. You might see men in rowboats, launches, or small sailing vessels in the shallower waters, who are " tonging " oysters. Oyster tongs consist of two strips of wood several feet in length, which are fastened together and worked somewhat like scissors. At the lower end of each strip, there is a wire rake. When the tongs are closed, the teeth of the rakes are forced under the oysters and the rakes form a basket in which the oysters are lifted into the boat. On some of the larger vessels, dredges are used instead of tongs.

At Baltimore and at smaller shipping centers near the shores of the bay, there are many oyster houses to which the boats bring their catches to be sorted, cleaned, and packed for sale. Formerly, many oysters were canned, but now most of them are shipped fresh, either in the shells or " shucked." Indeed, Baltimore is the only city in Maryland where some of the oysters are canned. If packed in ice or sent in refrigerator cars, fresh oysters can be shipped long distances without spoiling.

Here and there in the northern part of the Delmarvia mixed-farming region. — Figures 268, 269, 270, and 271 suggest views which you might see in the interesting farming region in which Washington, Baltimore, and Philadelphia are located. Figure 268 shows farm land south of Baltimore and west of Chesapeake Bay. Somewhat later you could have seen corn growing in the field which there is being plowed. Besides pasture lands and fields of corn, wheat, and hay, you would find in Maryland, Delaware, southeastern Pennsylvania, and central and southern New Jersey, thousands of acres of land used, as the maps in Figures 159, 160, and 218 show, for the growing of vegetables and fruits. Some of the lands with sandy soil are excellently suited for truck crops, especially after fertilizers have been added to them, and they are within easy reach, either by rail, by boat, or by both, of great city markets.

The picture in Figure 269 was taken near the eastern shore of Chesapeake Bay a little north of Baltimore. The baskets of tomatoes which have been brought to the canning factory in the picture show that some of the dots in the vicinity of Chesapeake Bay on

Figure 269 *By courtesy of the United States Bureau of Soils*

Figure 270 *© Brown Brothers*

the map in Figure 159 probably stand for acres of tomatoes. Indeed, although Maryland is a rather small state, it uses more land for the growing of tomatoes than is used for this purpose in any other state. This picture also shows that not all the canning work is done in the larger cities. Many canneries are scattered here and there through the truck and fruit districts, and each year people come from Baltimore to work in them during the canning season. The canning of fruits and vegetables is one of the more important industries of Maryland. Canned tomatoes form about half of the output of its canneries. New Jersey ranks second, and Delaware, small though it is, ranks fourth in the amount of land used for tomatoes. In Figure 270, you see wagon loads of tomatoes

Figure 271 *By courtesy of the United States Bureau of Soils*

awaiting shipment from a town in southwestern New Jersey. The picture in Figure 271 was taken in southwestern Delaware. The wagon loads of peas which have been brought to the cannery there suggest what other dots in Figure 159 stand for.

Still other truck and fruit crops important in the northern part of the Delmarvia region are sweet corn (in the acreage of which Maryland ranks first among all the states), cabbage, green beans, spinach, potatoes, sweet potatoes, cantaloupes, watermelons, strawberries, apples, peaches, pears, bush fruits, and cranberries. What kind of land in New Jersey would you expect to find used for cranberries (p. 176)? New Jersey ranks next to Massachusetts in the production of cranberries. The New Jersey bogs are in a district of pine forests, on land more nearly level than that of the cranberry district of Cape Cod. In these almost flat clearings in the forest, you might find at the time of the cranberry harvest many pickers who have come from some of the cities to help gather the crop. Some of these workers leave the cities in May, when the early strawberries are ripe, and work till autumn on the fruit and truck farms. They go from place to place picking peas, beans, peaches, pears, and cranberries as each crop ripens. Of what other part of the United States does this remind you (p. 53)?

Figure 272 *By courtesy of the Santa Fé Railroad Company*

What other special kind of farming does the map in Figure 105 suggest that you might see in this district? Notice that the dots are much more numerous in southeastern Pennsylvania than in any other part of the district. Grass grows much better on the clay soils west of the Delaware River than in the sandy soils east of the river and of Chesapeake Bay. On the other hand, the sandy soils are well suited for many kinds of vegetables. How does the nearness of large cities to these farms explain in part the demand for milk and for fresh vegetables?

On the map in Figure 207, notice which part of Delaware is crossed by the railroad route between Baltimore and Philadelphia. Do important east-west railroads cross the state farther south? Because of the broad waters of Chesapeake Bay, the Delmarvia Peninsula cannot be reached directly by railroads from the west. Moreover, partly because of the lack of good harbors, there are no important seaports on the Atlantic coast of the peninsula. In what part of Delaware, then, would you expect its largest city to be? Is not Wilmington where you might well look for such a city? Notice, too, that it is a seaport. This city is built on rather hilly ground, and handsome shade trees add to the beauty of many of its streets. It is a busy manufacturing and shipping center. In its foundries and machine shops, its meat-packing houses, its car works, its tobacco factories, its leather works, and its other factories, more than two-thirds of all the factory workers of the state are employed. Although its sea-going trade is much less than that of Baltimore, it is worth many millions of dollars and has been increasing rather rapidly.

A "play" city. — Before stopping at Philadelphia on the trip which you planned from Washington to New York City (p. 223), you might take a side trip to Atlantic City on the coast of southern New Jersey (Fig. 207). This is one of America's great playgrounds. What evidences are there in the view of Atlantic City which you see in Figure 272 that the city is a pleasure resort? What evidences can you find from the picture and from Figure 207 that it is a good place for such a resort? What does Figure 207 show you about the size of Atlantic City? If you were to visit it in August you would find five or six times as many people there as you would during the winter. Do you see why?

Philadelphia. — Find Philadelphia again on the map in Figure 207. On what river is it? Study carefully the map of the city in Figure 227, and make a list of all the facts you learn from it that are not shown on the other map. Figure 273 is an airplane view of the central part of the city looking northwest. The tall tower near the center of the picture is the tower of the "city hall." In this building, the mayor and other city officials have their offices. Do you see that it is convenient to have a city hall centrally located in a city, just as it is convenient to have a state capitol where it can be reached by most people of the state with least difficulty? Most of the huge buildings which surround the city hall are office buildings. A short distance to the left of it is the station of one of the railroads that enter Philadelphia. Do you think it is convenient to have a passenger terminal so near the business cen-

Figure 273

© Aero Service Corporation

ter? Why? As you can see from the picture, this part of the city is built on nearly level land. In studying the map in Figure 227, did you notice the pattern of the streets in the heart of the city? Do you see that it would be easy to have such a simple "street pattern" on nearly level land? In the western and northwestern parts of the city, however, the land is rolling or hilly, and there the street pattern is not so simple. In the older residence sections of the city, you could see row on row, street on street, of two-story dwellings built of red brick, with white steps and trimmings and with white or green shutters. This sameness of architecture is not found in the newer sections, some of the more attractive of which are in the hilly northwestern district where the people enjoy wider views and freer movement of air. The most crowded tenements are on the low, flat land in the southern part of the city.

Along the river front. — In Figure 274, you are looking northwest across the city from an airplane above the Delaware River. Find in this picture the city hall and the near-by office buildings, and notice how they tower above the lower buildings of the city. In studying the map in Figure 227, did you "list" the long line of piers along the water front? Some of these piers are shown in the foreground of Figure 274. Large ocean ships can come up Delaware Bay and Delaware River as far as Philadelphia, but can-

Figure 274 © Aëro Service Corporation

not go farther upstream because the river beyond the city is not deep enough. Do you see how its position at "the head of ocean navigation" helps to bring trade to Philadelphia? Ships sail between Philadelphia and many other ports of the United States and of Europe. The large ship, for example, in the fourth slip from the lower left-hand corner in Figure 274 came from Holland. What can you find in this picture which shows that water-borne freight and land-borne freight can be exchanged readily at these piers? Nearly all the piers along the many miles of water front are similarly served by railroads.

Near the river, and between it and the city hall, is the principal wholesale business district. Why would you expect this district to be near the river, rather than on the western side of the city? Remember that in this picture you are looking northwest, and decide whether you would be going upstream or downstream if you were to go on board the tug at the end of one of the piers in the foreground, and were to steam past the ocean-going ship and the piers beyond it. Farther upstream, to the northeast, there are great coal wharves, ship yards, and textile mills along the river, and to the west of them there are large manufacturing plants in which many things are made from iron and steel. In the southeastern part of the city, close to the river, there are large sugar refineries. In studying the map of the city in Figure 227, did you "list" the fact that a smaller river flows through the city to join the Delaware? Large vessels can ascend this river for several miles, and not far from its mouth there are petroleum refineries. Find on the map in Figure 43 the pipe lines which connect Philadelphia with oil fields to the west. Do you see why it is an advantage to have the textile mills, the sugar refineries, and the

Figure 275 *By courtesy of the Baldwin Locomotive Company*

petroleum refineries on the water front? What are your reasons for so thinking?

Compare Figures 171 and 207, and notice that Philadelphia is near the anthracite mining district and that it is connected with it by railroad. Does this not help to explain the coal wharves of the city? By comparing the two maps just mentioned, you can see, too, that Philadelphia has good railroad connections with the bituminous-producing district of western Pennsylvania. As you would expect, much bituminous coal also comes to Philadelphia for use in the city and for shipment to other places.

Trade and manufacturing. — Philadelphia, as you see, is a great center both for trade and for manufacturing. It receives by water great quantities of raw sugar, wool, hides, petroleum, leaf tobacco, dry goods, vegetable food products, and other items. By land come coal, iron and steel, petroleum, wheat, and many other products, both raw and manufactured. Many of the raw materials are used in its mills and factories, whose products are shipped to many markets both by ship and by rail. Among the leading products, most of which should have been suggested to you by the kinds of manufacturing plants near the river and the kinds of freight received, are refined sugar, textiles, carpets and rugs, leather and shoes, cigars and cigarettes, manufactures of iron and steel, and petroleum products. From what you have read about the kinds of manufacturing that are common to all large cities (p. 120), what items can you add to this list of Philadelphia products? In one of its southern suburbs, Philadelphia has a manufacturing plant which is the largest of its kind in the world. It is the plant for the making of locomotives which is shown in Figure 275. As you can see, the land chosen for this plant, like that selected for several of the other great industries of the city, is on the bank of the river. Many of the workers live in the adjoining village. Notice that all of the factory buildings are low. The machinery and materials used in making locomotives are so heavy that this work could not be done on the upper floors of tall buildings. You might, on the other hand, expect to find "light manufacturing" carried on in taller buildings in the city, close to the great supply of labor needed.

Find Camden on the maps in Figures 207 and 227. As you might think, Camden and Philadelphia in many ways form one great city. Among Camden's leading industries are the tanning, curing, and finishing of leather, the canning of vegetables, and the making of phonographs. Which of these industries might you expect to find in Camden because of what you have read about southern New Jersey?

Other Pennsylvania cities. — Find on the map in Figure 207 the cities of eastern Pennsylvania having a population of more than 50,000 through which you have not passed on your "trips" through the state. What facts can you learn about these cities from the map? All of them are manufacturing cities whose industries are closely related to Pennsylvania coal, both anthracite and bituminous, and to the railroads which connect them with coal fields and with some of the large seaport distributing cities you have visited. Figure 276 shows a great steel plant at Bethlehem. What other facts can you learn about this city from the pic-

Figure 276 *By courtesy of the Bethlehem Steel Company*

ture? What other cities does it suggest?

New Jersey's capital. — The route which you planned to follow from Pittsburgh to New York City passes, as you doubtless remember, through Trenton. As you already have noticed, Trenton is the capital of New Jersey. On what river is it situated (Fig. 207)? On which bank of the river? Manufacturing work as well as state government work is important there. Its leading industry is the same as that of Akron, Ohio (p. 219). What, then, is it? Its second industry is the making of pottery. How is its location on a direct route between the great ports of Philadelphia and New York an advantage in securing raw materials? In shipping its products to market? How is its location an aid in securing power for its factories? As in other cases which you have seen, the particular industries which lead in Trenton do so because, after men chose to start them there, they succeeded well.

Northern New Jersey. — In northern New Jersey, through which the last part of the route which you drew on your outline map passes, there are so many cities, crowded close together in a group or "constellation," that it was impossible to print on the map in Figure 207 the names of all those having more than 50,000 inhabitants. How many cities of each size shown on this map do you find in this New Jersey constellation? By reason of the nearness of these cities to New York City, they enjoy many of that city's advantages. As you read about the more important kinds of manufacturing work done in them, try to think what those advantages are and in what ways they are aids. In listing these advantages, you should think not only of many facts which you have learned about New York City but also of facts concerning other cities and other parts of the United States.

Newark is the largest city of the constellation, and Jersey City is second in size. Look again at the Weehawken terminal in Figure 12 (p. 12). South of these piers are the piers of Hoboken, and still farther south, those of Jersey City and those near Bayonne. Find these piers on the map in Figure 10 (p. 8). Notice that in Figures 8 and 9 you can see parts of these New Jersey cities along the west shore of the Hudson River and of the Upper Bay. They really form one great city. West of Bayonne is an arm of Upper Bay, called Newark Bay. Elizabeth is at the southwest corner of Newark Bay, and Newark is farther north on the Passaic River, which flows into the bay from the north (Fig. 10). Newark can be reached by barges. Both Elizabeth and Newark, then, are also "New York Harbor cities," although vacant marshlands separate Newark from Jersey City on the Hudson shore. Industrially and commercially, you may think of Weehawken, Hoboken, Jersey City, Bayonne, Elizabeth, and Newark as one great center. Farther upstream on the Passaic River is the city of Passaic and, still farther, near the falls of the river, Paterson (Fig. 10). Of the larger cities of northeastern New Jersey, then, all but two are New York Harbor cities, and those two are not far from the harbor group.

What did you learn in your visit to New York City (p. 11) about railroads which come from the west to the shores of Upper Bay or of the Lower Hudson? What two advantages, then, do the West Shore cities have for receiving and shipping goods? Are they nearer to coal-producing districts than the New England cities, or farther away? To visit all the kinds of factories you could find in them would take you many weeks. The following brief statements will give you some idea of the great variety of work to be seen in these cities. In Hoboken, foundry and machine-shop products are most valuable, but there you also could see, for example, men making tin foil, lead pencils, baking powder, and scientific instruments. In Jersey City, meat-packing products lead in value, but you could see men refining sugar and petroleum, making ropes, castor oil, paints, chocolate, brass and bronze, soap, silk, and cigars. Even this is but a small part of the long list of things made in Jersey City. In Newark, the tanning, curing, and finishing of leather is the most important industry, according to value of product. Among the many other industries of this city are the making of jewelry, the manufacture of felt hats, the roasting of coffee, the building of steel ships, the making of shoes and cotton cloth, the smelting of copper, and the refining of copper and gold. More than half of the products, by value, of East Orange (Fig. 10), which joins Newark, consists of electrical machinery and electrical apparatus. Chemicals are conspicuous among Bayonne's products, but there, too, a great variety of things is made, ranging from wooden ships to tinware. Vegetable oils and sewing machines are among the important manufactures of Elizabeth. These lists are not given for you to learn them, but to let you see that in these cities the advantages are similar for making many kinds of products.

The inland cities of northern New Jersey have not, of course, the harbor advantages of the seaport cities, but their other advantages are much the same. Paterson is the largest of the inland cities. Like Scranton and Wilkes-Barre, it is a "silk city." Shipments of raw silk that are of great value weigh comparatively little. Millions of dollars' worth can be shipped on a single train. The cost of transportation is very small, therefore, as compared with the value of the raw material. Do you see, then, that men can well afford to carry silk to inland mills? Indeed, raw silk received at Seattle is shipped by train across the continent. Passaic, too, is a "textile city." About half of its products by value is worsted goods, and cotton goods are next in importance. Some silk also is manufactured there. These larger inland cities tend to specialize in one or two industries, rather than to develop many industries of almost equal importance.

Of course, where so many manufacturing cities are near one another, the population per square mile is great. In addition to the many people who live in the manufacturing cities, there are many who live in neighboring residence towns, from which they go daily to their work in the cities. There also are many dairy farmers and truck farmers in northern New Jersey (Figs. 105 and 159), who supply milk and vegetables to the near-by cities and towns. See now whether the conditions in northern New Jersey that are shown on the maps in Figures 80 and 120 are what you would expect them to be.

In Camden, Trenton, the constellation of cities in the northeastern part of the state, and other smaller towns, so much manufacturing is done that New Jersey, although rather small, ranks sixth among the states in manufacturing. About as many people are engaged in manufacturing and mechanical industries in New Jersey as are employed in trade, transportation, agriculture, and all other work combined.

New York City. — What did you learn from the description of New York City on pages 7–17 that helps to explain why it is such a great city? It is by far the largest of the many great cities of the United States, having a population of more than five and a half millions. As you read about other parts of the country did you find any additional facts that help to explain the great population of the city? If so, did you keep a record of them (p. 17)? You might now make as long a list as you can of the advantages that have helped New York to become a great commercial and manufacturing city. Will you include in your list the following points? Tell why, or why not, in each case.

1. It has a roomy, deep harbor, with a good channel leading to the open sea, and many miles of water front where ships may load and unload.

2. It is on the Atlantic Coast, opposite Europe, with which the United States has more trade than with Asia, Africa, Australia, and South America combined. It is nearer to Europe than is any other great port of the United States, save Boston.

3. It has better railroad connections with all parts of the country than does any other seaport (Fig. 23). (1) More railroads from the Interior cross the northern part of the Appalachian Barrier than cross the southern part, partly because the northern part is less wide, less high, and has more usable passways. Even some railroads which follow valley routes across the northern Appalachians to seaboard cities farther south, such as Baltimore and Philadelphia, have been extended to New York to share in its great trade. (2) By far the lowest route through the barrier, and the one easiest and cheapest for railroad use, is that by way of the Hudson and Mohawk valleys. Along this route, New York City has unrivalled connections by rail and by water with the Great Lakes. The cities of the New York Harbor group are, indeed, the only American seaports connected by river and modern canal with these great "inland seas." (3) New York has good railroad connections with most parts of New England and the south Atlantic seaboard, as well as with the Interior and the West. It is, then, the greatest meeting place of land routes from all parts of this country and ocean routes from countries overseas.

4. It can obtain the great quantities of coal which it needs for heat and for power from mining districts that are relatively near.

5. Since it is "the great landing place" of America, thousands of people from Europe who are eager to find work in America come each year to the city and increase the supply of laborers for its factories.

Do you not see why it was impossible to understand the greatness of New York City before you had learned (1) of the riches of the United States in farm lands and grazing lands, in forests, in coal, iron, and other minerals, in water power, and in other resources, (2) of the ways in which these resources are used, (3) of the routes over which some of the products of the country reach the city, for use there or for shipment elsewhere, and (4) of the needs of people in other parts of the United States for products which can be manufactured or collected advantageously at New York and can be distributed from there, in addition to the things which you "saw" on your first visit to the city?

The great "belt of cities." — New York, the largest city in the United States, is centrally located in the greatest belt or zone of cities in the country. The maps in Figures 120 and 207 will show you that this "urban belt" extends from the cities of eastern Massachusetts southward to Baltimore and Washington. You should now be able to list the more important facts which explain this remarkable belt of cities. Compare your lists with one another, but do not add to your own list any item set down by another pupil unless you are sure it is correct.

Where population is densest. — At the beginning of your study of Northeastern United States, you were asked (p. 173) to watch for facts which would help you to explain why that part of the country has most people. You should now realize this is due chiefly to the fact that it is the greatest manufacturing and commercial section of the country, and you should know in turn the principal reasons for its leadership in those lines. You might list your reasons and compare them as you did the lists suggested in the preceding paragraph. Those lists should help you in preparing this one.

Of course the population in Northeastern United States is not equally dense everywhere. You should be able now to explain most of the areas of greater density and most of those of lesser density as shown by the map in Figure 80. In studying this map, compare it carefully with the map in Figure 207.

In Northeastern United States live more than half of all the people in the country. In New York City and vicinity live more than a seventh of all those in Northeastern United States.

Being a guide. — You should now be able to guide visitors from foreign lands about the United States (p. 17). On a fresh outline map, draw the route of the trip on which you would like best to take them. After you have finished drawing the route, tell (1) why you chose that route, (2) the more important facts concerning how men work and play in the various regions through which you would pass, and (3) all the reasons you know for those facts.

A journey puzzle. — The following paragraphs describe briefly a trip across the United States. As you read them, decide whether the trip described is from east to west, from west to east, from north to south, or from south to north. Tell all the reasons why you decide as you do.

"Our journey began late in the morning at a city on the shore of a great bay. After passing through other towns along the shore, we presently came to a prosperous farming country. The train sped past great, flat fields of grain and alfalfa, past orchards of various kinds, through a state capital, and in a few hours began the long climb that it had to make in order to cross a great range of mountains. By eight o'clock that evening, we were more than a mile and a quarter above the lowland through which we had passed and were in the midst of evergreen-dotted slopes, above which towered barren peaks. In the darkness we descended the much shorter slope beyond the pass, and continued our journey across arid lands high above sea level. We awoke next morning in this land of little rain, and traveled all day without seeing many towns or farms. Occasionally we passed irrigated fields, or spied in the distance some lonely ranch house. Here and there dark, tree-clad mountains were in view, rising like rocky islands above the surrounding plateau.

"By noon the next day we were beyond the land of plateaus and mountains, in a region of vast, grassy plains. These grasslands merge gradually into a country of rich farm land. It was late evening before we reached these rolling prairies, but we passed through towns at frequent intervals and knew we were in a region settled more densely than those through which we had passed. Early the next morning we crossed a great river, and some four hours later, at the end of almost three days and three nights of continuous travel, we arrived at the largest city of interior United States. There we changed cars for the first and only time during our long journey. In the course of the next twenty-four hours we passed through many towns and cities, several of them near the shore of a great lake, and through farm lands which were dotted here and there with woods. Finally, we followed a wide valley through low, tree-clad uplands to a seaport city across the continent from our starting place."

Making similar puzzles. — You might write a similar short description of another trip across the United States and ask others in the class to decide, as you read your paragraph, in which direction the journey you describe in it was made.

Describe places in or parts of the United States without mentioning names, and let others try to recognize the places or parts you describe.

Work region puzzles and paragraphs. — One of you might read aloud to the others the paragraphs from your notebook which describe some of the "work regions" of the United States, omitting all names of places as you read. Those who listen should decide which work region a paragraph describes, and should write the names of the regions in the order in which the descriptions of them are read. You might then write for your notebook five paragraphs which describe the five regions or parts of regions which you have found in Northeastern United States.

Work areas in the West. — Perhaps you have wondered why you were not asked to find and name work regions in the West. The chief reason is that there are so many small work areas in the West, separated from one another by unused or little-used land, that it would be difficult for you to name all of them and not particularly helpful to do so. The Pacific Coast valleys and eastern Washington are large farming areas, but there also are many small farming areas elsewhere in the West, and in addition many small mining areas, logging areas, and areas of other kinds. You may think of the West, then, as a section of many varied work areas, most of which are small, and between which there are areas of unused or little-used mountains or deserts.

What facts about work in the West are shown by the maps in Figures 171, 213, 214, 215, 217, and 218? How many of these facts had you already learned?

Work near your home. — How do the facts you have learned about the United States help you to explain (1) the kinds of work which men are carrying on near your home, and (2) the important

ways in which land near your home is used (p. 28)?

Rearranging lists. — Tell from the titles what facts are listed in each of the following columns of figures. Notice that the names of the states and of the cities are arranged alphabetically. Make (1) a list of the states arranged in the order of their size, (2) a list of the states ranked according to their population, and (3) a list of the cities ranked according to their population.

States	Area in Square Miles	Population (1920)
Alabama	51,998	2,348,174
Arizona	113,956	334,162
Arkansas	53,335	1,752,204
California	158,297	3,426,861
Colorado	103,948	939,629
Connecticut	4,965	1,380,631
Delaware	2,370	223,003
Florida	58,666	968,470
Georgia	59,265	2,895,832
Idaho	83,888	431,866
Illinois	56,665	6,485,280
Indiana	36,354	2,930,390
Iowa	56,147	2,404,021
Kansas	82,158	1,769,257
Kentucky	40,598	2,416,630
Louisiana	48,506	1,798,509
Maine	33,040	768,014
Maryland	12,327	1,449,661
Massachusetts	8,266	3,852,356
Michigan	57,980	3,668,412
Minnesota	84,682	2,387,125
Mississippi	46,865	1,790,618
Missouri	69,420	3,404,055
Montana	146,997	548,889
Nebraska	77,520	1,296,372
Nevada	110,690	77,407
New Hampshire	9,341	443,083
New Jersey	8,224	3,155,900
New Mexico	122,634	360,350
New York	49,204	10,385,227
North Carolina	52,426	2,559,123
North Dakota	70,837	646,872
Ohio	41,040	5,759,394
Oklahoma	70,057	2,028,283
Oregon	96,699	783,389
Pennsylvania	45,126	8,720,017
Rhode Island	1,248	604,397
South Dakota	77,615	636,547
South Carolina	30,989	1,683,724
Tennessee	42,022	2,337,885
Texas	265,896	4,663,228
Utah	84,990	449,396
Vermont	9,564	352,428
Virginia	42,627	2,309,187
Washington	69,127	1,356,621
West Virginia	24,170	1,463,701
Wisconsin	56,066	2,632,067
Wyoming	97,914	194,402
Total—all states and District of Columbia	3,026,789	105,710,620

Population of the Twenty-five Cities of the United States Having More Than 250,000 Inhabitants (1920)

Baltimore	733,826	Minneapolis	380,582
Boston	748,064	Newark	414,524
Buffalo	506,775	New Orleans	387,219
Chicago	2,701,705	New York	5,620,048
Cincinnati	401,247	Philadelphia	1,823,779
Cleveland	796,841	Pittsburgh	588,343
Denver	256,491	Portland, Ore.	258,288
Detroit	993,678	Rochester	295,750
Indianapolis	314,194	San Francisco	506,676
Jersey City	298,103	Seattle	315,312
Kansas City, Mo.	324,410	St. Louis	772,897
Los Angeles	576,673	Washington	437,571
Milwaukee	457,147		

Comparing areas and populations. — What do the foregoing lists show you that none of your maps shows? How does your own state rank in size? Which is the largest state? Add together the areas of all the New England states, of Indiana, Ohio, New York, Pennsylvania, New Jersey, Maryland, and Delaware. Is their combined area greater or less than the area of Texas? Try "filling in" other large states with smaller states in a similar way.

What state has fewest people? What state has next fewest? Add the population of these two states. Are there as many people in these states as there are in Philadelphia? If not, add the population of the state second from the last in number of people, third from the last, and so on till their combined population is about equal to the population of Philadelphia. What does this show you about the size of this city? In a similar way, match the population of Chicago and that of New York City with the population of states or groups of states.

Notice that the colors in Rhode Island on the map in Figure 80 are the darkest two shades on the map, although Rhode Island is far down in the list of states when they are ranked according to population. How do you explain this fact?

For your notebook. — I. You can make a graph which will show about how many persons are engaged in each of the more important kinds of work you have found men doing in the United States. Write the words "General farming," and after them draw ten "stick men" in a row. Each stick man stands for 1,000,000 workers. About how many people in the United States, then, are engaged in general farming? Then write in a row the words "Dairy farming, stock raising, fishing, and forest work," and draw one stick man at the end of that row. After "Mining," draw one stick man; after "Manufacturing," eleven men; after "Transportation," three men; and after "Trade," four men. About how many million people are engaged then, in all the kinds of work you have listed? Altogether there were about 41,000,000 people listed in 1920 as workers. How many workers does this leave unaccounted for? Among these people were the teachers, doctors, lawyers, servants, book-keepers, stenographers, and various others. Altogether the workers formed far less than half the total population. Of course children form a large part of the population, and the above list does not include them nor the women who are home keepers. In what two kinds of work are by far the greatest number of workers engaged?

II. Make next a graph to show how the farming population is distributed among the various sections of the country. The farming population includes the families of the farmers and all other people living on farms. Write "Southeastern Section," and after these words draw eleven stick men. Each man stands for about 1,000,000 people. These 11,000,000 people are more than half of all the people of the Southeast. In a similar way show that there are about 10,000,000 farm people in the Western Interior, 8,000,000 in the Northeast, and 2,000,000 in the West. Are you surprised to find fewer farm people in the densely populated Northeast than in the less densely populated Southeast? Tell why you are, or why you are not.

III. Your next graph will show about what part of the crop land of the United States was used for each of the more important crops at the time of the last census. (1) To represent all the land which then was used for crops, draw thirty-five one-fourth inch squares. Each one of these stands for about 10,000,000 acres, which are more than there are in the states of Delaware and Maryland together. (2) Put "C's" in twenty-two of these squares to show that about 220,000,000 acres were used for growing cereals. Is this more or less than half of all the land used for crops? (3) Color orange eight of the squares and about three-fourths of the ninth square in which you put "C's," to show that corn was raised on about 87,000,000 acres. (4) Color the rest of the ninth square and seven other squares brown to show that about 73,000,000 acres were used for wheat. (5) Color three squares and almost all of a fourth square yellow, to show that about 38,000,000 acres were used for oats. How many of the twenty-two squares marked "C" are left white? These stand for all other cereal crops, such as barley, rye, kafir, and rice. (6) Color eight squares green to show about how much land was used for hay and forage crops. For how much land do these squares stand? (7) Color three squares and a third of another one pink to stand for the amount of land used for cotton. How many of the thirty-five squares are left? They show the amount of land used for tobacco, sugar cane, sorghum, vegetables, bush fruits, sugar beets, flax, hemp, peanuts, and other crops.

This graph shows you that by far the greater part of the crop land of the United States is used for five crops. What are they? The value of these five crops was more than three-fourths of the value of all the crops in the United States at the time of the last census. Does this graph show you anything about these crops that the agricultural maps do not show? If so, what? What do the dot maps show that this graph does not? What crops will you think of, then, as the leading five in the United States?

IV. (1) On a blank outline map, print "C 1" in Iowa, "C 2" in Illinois, "C 3" in Nebraska, "C 4" in Indiana, and "C 5" in Ohio. At the last census these were the leading five states in the production of corn. Compare your map with that of corn acreage in Figure 100. Are these the states you would have expected to be the leading ones in corn production? (2) Print "W 1" in Kansas, "W 2" in Illinois, "W 3" in Oklahoma, "W 4" in Missouri, and "W 5" in North Dakota. Did these states rank in the production of wheat as you would have expected them to do from the maps in Figures 101 and 102? (3) Print "Cn 1" in Texas, "Cn 2" in Georgia, "Cn 3" in South Carolina, "Cn 4" in Oklahoma, and "Cn 5" in Mississippi. Compare your map with that in Figure 111. (4) Print "O 1" in Iowa, "O 2" in Illinois, "O 3" in Minnesota, "O 4" in Wisconsin, and "O 5" in Texas. Compare your map with that in Figure 103. (5) Print "H 1" in Wisconsin, "H 2" in New York, "H 3" in Iowa, "H 4" in Minnesota, and "H 5" in Kansas. Compare your map with that in Figure 104. Make a list of the more interesting facts which this completed map shows you. Notice, however, that the maps

in Figures 100, 101, 102, 103, 104, and 111 show many facts that your map does not show. What are some of them? The more important facts to remember about the production of each of these crops are (1) the general areas in which men use much land for it, and (2) reasons why it is important there.

V. In a similar way, make an "animal map," letting "H" stand for horses, "M" for mules, "BC" for beef cattle, "DC" for dairy cattle, "S" for swine, and "Sh" for sheep. Print in Iowa "H 1" to show that at the time of the last census Iowa ranked first among the states in number of horses. Print in each state named in the following lists the letter or letters and number indicated.

(1)	(2)
"H 2" Illinois	"M 1" Texas
"H 3" Kansas	"M 2" Georgia
"H 4" Texas	"M 3" Missouri
"H 5" Nebraska	"M 4" Tennessee
	"M 5" Oklahoma

(3)	(4)
"BC 1" Texas	"DC 1" Wisconsin
"BC 2" Iowa	"DC 2" New York
"BC 3" Nebraska	"DC 3" Minnesota
"BC 4" Kansas	"DC 4" Illinois
"BC 5" South Dakota	"DC 5" Iowa

(5)	(6)
"S 1" Iowa	"Sh 1" Texas
"S 2" Illinois	"Sh 2" California
"S 3" Missouri	"Sh 3" Idaho
"S 4" Indiana	"Sh 4" Ohio
"S 5" Nebraska	"Sh 5" Montana

What are the more interesting facts which your "animal map" shows? What other interesting facts can you learn by comparing this map with the map showing ranks of states in the production of the leading five crops? Does the "animal map" show what you would have expected from the maps in Figures 92, 105, 106, and 107 and from your study of the United States?

VI. Make a map according to the following directions, which will show what the most valuable crop in each state was at the time of the last census. (1) On a blank outline map of the United States, put a "C" in each of the following states: Ohio, Indiana, Illinois, Iowa, Missouri, South Dakota, Nebraska, Delaware, Maryland, Virginia, West Virginia, Kentucky, and Tennessee. Doubtless you already have guessed that this letter stands for corn. Some states in which corn was not the leading crop produced more corn than some of these states did. Be sure to remember this fact in thinking about this map. (2) Put "W's" for wheat in North Dakota, Kansas, and Washington. (3) Put "Cn's" in North Carolina, South Carolina, Georgia, Alabama, Mississippi, Arkansas, Texas, Oklahoma, Louisiana, and Arizona. "Cn," as you should have decided, stands for cotton. (4) Put "H's" for hay and forage in New Hampshire, Vermont, Massachusetts, Rhode Island, New York, Pennsylvania, Michigan, Wisconsin, Minnesota, Montana, Idaho, Wyoming, Colorado, New Mexico, Utah, Nevada, and Oregon. (5) In Maine and New Jersey, put "P's" for potatoes; (6) in Connecticut, a "T" for tobacco; and (7) in California and Florida, "F's" for fruit. Notice that oats is not a leading crop by value in any state. Does this map show any facts which are surprising to you? If so, what ones? What have you learned which helps you to explain in the case of each state why the crop indicated in it on this map is the leading one there?

VII. Make a "manufacturing map" of the United States according to the following directions. (1) Color brown New York, Pennsylvania, Illinois, Ohio, Massachusetts, New Jersey, and Michigan. Each of these states produced manufactures whose value was more than $2,000,000,000, as reported in the last census. (2) Color orange California, Indiana, Wisconsin, Missouri, Connecticut, Minnesota, Texas, North Carolina, Kansas, Maryland, Washington, Rhode Island, Iowa, Georgia, Louisiana, Virginia, Nebraska, and Tennessee. These states each produced more than $500,000,000 worth of factory products, but less than $2,000,000,000 worth. (3) Color yellow the remaining states, each of which produced less than $500,000,000 worth of manufactured products. This map should help you to remember the leading seven states in manufacturing. What reasons can you give for their leadership?

VIII. With the aid of the following directions, make a map showing the value of the products of mining in the various states, as shown by the last census. Let one dot stand for $10,000,000 worth of products of mining industries. The following table shows the number of dots to be put in each state which produced at least $10,000,000 worth.

Pennsylvania	81	Ohio	13	Alabama	5
West Virginia	29	Minnesota	13	Indiana	5
Oklahoma	28	Michigan	10	Colorado	5
Illinois	17	Kentucky	9	Montana	4
California	16	Kansas	9	Wyoming	4
Texas	16	Arizona	8	Utah	4

Louisiana	4	Tennessee	2	Washington	1
Missouri	3	New Mexico	1	Idaho	1
Virginia	2	Iowa	1	Wisconsin	1
New York	2	Nevada	1		

What products are suggested to you by the dots on your map in each of these states? What state leads in mineral production?

IX. A graph made according to the following directions will aid you in comparing the values of the more important kinds of products that are mined or quarried. Each dot will stand for $25,000,000 worth. The dots in each row should be the same distance apart, say one-eighth of an inch. Those in the second row should be exactly below the corresponding dots in the first row, and so on. After "Bituminous coal" make forty-five large dots; after "Petroleum and natural gas," thirty-seven; after "Anthracite coal," fourteen; after "Iron ore," eight; after "Copper," seven; after "Lead and zinc," three; after "Gold and silver," two; and after "Limestone," two. What fact that was stated about "precious metals" in connection with mining in the West (p. 41) does this graph illustrate? How does the graph aid in explaining the fact?

X. Make a graph which will show the amount of lumber produced in the more important lumbering states. For Washington, draw a "board" one-half inch wide and five and one-half inches long. Each inch in length stands for a billion board feet. A board foot is a piece of wood a foot square and an inch thick. This shows, then, that Washington produces five and one-half billion board feet of lumber. The following table shows the lengths in inches of the "boards" to be drawn for each of the other states to be included. Make each of them half an inch wide.

Oregon	$3\frac{1}{4}$	Florida	1
Louisiana	$3\frac{1}{8}$	Idaho	1
Mississippi	$2\frac{1}{4}$	Tennessee	$\frac{3}{4}$
California	$1\frac{1}{2}$	Georgia	$\frac{3}{4}$
Arkansas	$1\frac{1}{2}$	Michigan	$\frac{3}{4}$
Alabama	$1\frac{1}{2}$	West Virginia	$\frac{3}{4}$
Texas	$1\frac{3}{8}$	South Carolina	$\frac{5}{8}$
North Carolina	$1\frac{1}{4}$	Minnesota	$\frac{5}{8}$
Wisconsin	1	Pennsylvania	$\frac{1}{2}$
Virginia	1	Maine	$\frac{1}{2}$

A map and graph exhibit. — You might invite another class, your parents, or other guests, to see all of the maps and graphs which you have made for your notebook during your study of the United States. Perhaps you can hang them around the room so that visitors can see them easily. You might take turns acting as guides to explain the facts each map or graph shows and to tell reasons for the facts shown. Perhaps you could use pictures to aid you in your explanations. Your guests might also be interested in watching you run some "races" or play some of the games which you have learned in connection with your study of the United States.

A map to be explained. — The map in Figure 277 shows the "net" of railroads in the United States. Notice in what parts of the country the net is thickest. What facts have you learned about these parts of the United States which aid you in explaining why there are so many railroads there? On the map in Figure 207, find in northeastern New York the Adirondack Mountains. Notice on the railroad map the light "spot" in this part of New York. How do you explain it? Find other light spots on the railroad map, and try to explain them with the aid of the maps in Figures 23, 27, 82, 157, and 207.

A "measuring map." — You can use the map in Figure 120 in various ways to aid you in measuring your knowledge of some of the facts you should have learned about the United States. (1) Can you name correctly all the cities indicated on this map by dots of the largest size used? As you name each, point to the dot which stands for it. (2) Can you name nearly all of those indicated by dots of the next largest size used? (3) Can you name at least ten of the cities of smaller size shown? (4) Can you give reasons why many of the cities in Washington, Oregon, and California are in a narrow north-south belt almost parallel to the coast? (5) Can you give reasons why all the cities shown in Utah are in a north-south belt? (6) Why there is a cluster of small cities northwest of Duluth, Minnesota? (7) Why there are fewer dots in Nevada than in any other state? (8) Why there are "empty spots" on this map in the northern part of lower Michigan, in southeastern Missouri, in southern Florida, in eastern Kentucky, in northeastern and in southeastern New York, and in northern Maine? (9) Can you give reasons why many cities of New York are in a narrow belt between the eastern end of Lake Erie and Albany? (10) Why the distribution of cities in Pennsylvania is strikingly different from the distribution in Iowa? (11) Can you find the group of "anthracite" cities? (12) Can you find the group of "Kentucky bluegrass" cities? Of Connecticut Valley cities? (13) Can you name other facts about the United States which are suggested to you by this map and which have not been used in answering the

Figure 277. The railroad "net"

preceding questions? If so, what are they? For example, the map should at once recall to you the fact that there are many more people in Eastern United States than there are in the western half of the country, and reasons for that fact. It should bring to your mind reasons for the most striking belt of large cities shown on the map. Where is this belt? (14) What cities of more than 500,000 people which are outside this belt of cities are surrounded by striking constellations of smaller cities?

You can check many of the facts which you used in explaining the distribution of cities shown in Figure 120 by comparing it carefully with the maps in Figures 23, 27, 82, 157, and 207. If you should wish to know the names of some of the cities which the smaller dots represent, you can find them by comparing Figure 120 and the reference maps in Figures 320, 321, 322, and 323.

Playing with maps. — You can play a game with maps such as those in Figures 33, 100, and 101. Cover the title of the map, and carry the book along the aisle so that each of the pupils sitting in one row can see the map whose title is hidden. One person in each row is "passer." Each of the other pupils glances at the map as it passes, decides what he thinks the map shows, and writes down "Corn," "Winter wheat," or whatever title he decides upon. The winner of the game is the one who names the greatest number of maps correctly.

An alphabet game. — Write the letters of the alphabet on the blackboard, arranging them in several columns. The first pupil to whom the chalk is given writes after "A" the remainder of the name of a state beginning with that letter and passes the chalk to another pupil. This pupil draws a line after "B" to show that there is no state name beginning with that letter, and hands the chalk to a third pupil who writes after "C" the remainder of the name of a state beginning with "C." Continue in this way till the alphabet is completely filled out either with state names or blanks. If your list has no mistakes in it, the class wins. If it has mistakes, "Jack" wins. If you choose sides and put two alphabets on the board, you can race to see which side can make a correct list first.

Old games. — Do not forget to play with the names you have learned in recent weeks some of the games you learned earlier.

By courtesy of the United States Geological Survey

Figure 278

SCATTERED AMERICAN LANDS

Comparisons. — After reading again the paragraph "Scattered parts of your country," page 17, decide in which of these lands you think the picture in Figure 278 was taken. As you doubtless saw from the map in Figure 15, Alaska is much the largest of these scattered lands. Add the areas of all the states in Northeastern United States (p. 239), and compare the sum with the area of Alaska, which is 590,884 square miles. What do these comparisons show you about the size of Alaska?

The areas of the other more important scattered American lands are as follows: Philippine Islands, 115,026 square miles; Hawaiian Islands, 6449 square miles; Porto Rico, 3435 square miles; Panama Canal Zone, 537 square miles. Compare the size of each of them with the size of your own state.

These lands do not rank in number of people in the same order in which they rank in size. *In Porto Rico, there are twenty-three times as many people as there are in Alaska.* In all Alaska, there are only some 55,000 people — about as many as in the city of Lincoln, Nebraska. If they were distributed evenly throughout the territory, there would be only *one person for each ten square miles* of land. In Porto Rico, there are about *three hundred seventy-eight people for each square mile.* In the other more important scattered lands, there are from forty to two hundred people to each square mile. Is not the great difference between the density of population in Alaska and that in the other scattered lands surprising?

Directions for reading. — As you learn from the following paragraphs of the ways in which men fit their work in these various lands to the kinds of country in which they live, find all the reasons you can for this difference in population density. Find facts which suggest that Alaska will not always be settled so sparsely.

Figure 279

Alaska

Southern and southeastern Alaska. — More than half of the people of Alaska live along the southern coast of the main peninsula and in the narrow "panhandle" strip which stretches southeastward from it (Fig. 279). Even in these parts of Alaska, however, settlement is nowhere dense. The coastal villages, hemmed in between forested mountain slopes and the sea, the deep fiords, the waterfalls, and the barren peaks remind one somewhat of Norway. Southern Alaska is a land of rain rather than of snow. The mild, rainy winters, and the cool, less rainy summers are much like those of western Washington. Do not several of these facts suggest that you probably would find men engaged in fishing, logging, and dairy farming there?

Fishing, lumbering, and farming. — In southern and southeastern Alaska, many more people are engaged in the fishing industry than in lumbering. From May to August, salmon come in great numbers into many streams, and, here and there along the water's edge, canneries have been built much like that in Figure 280. Cases of canned fish can be loaded at such factories on to boats which carry them to the States. In addition, many halibut are caught in near-by waters by deep-sea fishermen, and are frozen or salted to be shipped to distant markets.

In most cases, on the other hand, it does not pay to send logs or lumber from Alaska to the States or to other far-away markets. A cargo of lumber is worth much less than an equal weight of canned salmon. The cost, then, of carrying the lumber is greater as compared with the value of the cargo than the cost of carrying salmon is. Since there are as yet few people in Alaska, the demand for lumber *there* is small. Much of what *is* cut is used in making packing cases for the canned fish.

Figure 280 © Ewing Galloway

Figure 281 © Ewing Galloway

Farming, too, is as yet less important in these parts of Alaska than fishing. It would be impossible to market with profit all that could be produced on the lands there which might be used for farms. Of course, much of the land is too steep to be tilled, but in the valleys there is much rich land which now is unused. The summers are so cool and rainy that grain does not ripen, but, as in western Washington, certain kinds of grasses, vegetables, and berries grow well. Much land is well suited, then, for dairy and truck farming, but very little land is needed to supply dairy and truck products for the few people who live there. Moreover, the lands nearest Alaska to the east and west do not afford good markets for such products, for there are comparatively few people in northwestern Canada and in northeastern Asia. It would not pay to ship such products to markets in the States, for the same kinds of products are raised in abundance in places nearer these markets.

Mining. — Gold, on the other hand, has attracted thousands of people to Alaska. It can be carried long distances with profit because of the great value of a small amount of it. It is mined at many places in southern and southeastern Alaska, although not so much is produced now as in earlier years. On the map in Figure 279, find the Copper River. Near this river, there are rich copper mines. Copper also is mined near Ketchikan (Fig. 279). Southern Alaska is rich, too, in silver and in coal. As you might expect, several of the towns of these districts are mining towns.

Reaching interior Alaska. — In what ways are the settings of Juneau (Fig. 3) and Seward (Fig. 278) alike? Other coast towns look much like these. There is no city or town in Alaska in which there are as many as five thousand people. To reach Fairbanks, the largest town in interior Alaska, you might go from the coast north of Juneau by rail 110 miles to the upper Yukon River, down the Yukon about 1150 miles to the Tanana, and up the Tanana some 275 miles. This journey takes many days, and, at times, many weeks. Trace it on the map in Figure 279. You might go, instead, by boat to Seward, and thence north to Fairbanks over the railroad recently built by the United States government (Fig. 279). This railroad trip takes only two days. In "time," then, the new railroad brought Fairbanks much nearer Seattle than it formerly was.

At whatever time of year you were to go, you would find the harbors of Juneau, Seward, and other towns of southern Alaska open. Winters in these towns are milder

Figure 282 © Ewing Galloway

than in cities on the Great Lakes. Their nearness to the ocean helps to explain this. Moreover, a warm ocean current flows near the southern Alaskan coast, and so winter winds which blow from the sea are even warmer than you might expect.

In the matter of sending goods to markets in the States, do you think that interior Alaska is more handicapped than southern and southeastern Alaska, or less so? Give reasons for your answer.

Work near the railroad. — Along the route of the government railroad, there is much wilderness, but here and there work is going on. Within easy distance of it there are more than two hundred gold mines and a number of coal mines. The coal seams you see in Figure 281 are in one of the coal fields near the railroad, and doubtless they will be mined later. In Figure 282, you see farm lands between Seward and Fairbanks.

Good wagon roads and branch railroads have been planned to reach from the main railroad to other districts. Some " feeders " already have been built. They will help to make it pay to open mines in some places where mining cannot now be carried on with profit, for the cost of shipping materials in and out will be less. As more mines are opened, more farms will be needed.

Glimpses of work in interior Alaska. — At Fairbanks, though it is a mere village, one finds many suggestions of the work going on in interior Alaska, for this town is the chief trading center of a vast area. In the stores there, you could see picks, shovels, buckets, pans for washing gold out of gravel, and other supplies which miners need. As the mining tools for sale suggest, much of the gold mined in the district is washed from gravels along the streams.

Farm machinery also may be bought in Fairbanks. There is much good farm land in the Tanana Valley (Fig. 279), and a few farms. The summers there are not long enough to let corn ripen, and there is less rainfall than near the southern coast, but spring wheat, some other grains, and various vegetables mature. Although frost in some years comes as late as June and as early as

Figure 283 © Ewing Galloway

August, the crops grow rapidly during the short summer because they have so many hours of sunshine. If you think again of the way in which the sun behaves in lands near the Arctic Circle, it will help you to explain this.

The work of fishermen and fur traders is suggested by wire netting for fish wheels, and supplies which traders exchange for furs. In summer, boat loads of furs are brought to trading posts such as Fort Yukon (Fig. 279) by Indians and by white men who collect them during the winter in the vast wilderness to the north and east.

What, then, does a study of Fairbanks stores suggest to you about interior Alaska that the map in Figure 279 does not show? As yet, the most important work of the district is mining, and most of the lonely little settlements in this vast, almost empty land are mining towns.

Lands near Bering Sea and the Arctic. — Western and northern Alaska are more nearly empty than the other parts you have seen, and they are harder to reach both by land and by sea. To Nome, the distance from Seattle is about 2620 miles, almost twice that to Seward. Moreover, the west coast ports are closed by ice for about half

Figure 284 © International Newsreel Corporation

the year. When the sea route is closed, Nome is reached from Seward by way of Fairbanks. Between Fairbanks and Nome, winter travel is by means of dog sleds.

Perhaps you wonder why there are any settlements at all in these parts of Alaska. The chief answer is "gold." At Nome, thousands of dollars' worth of the precious metal have been washed by hand out of the sands of the beach. Now most of the mining is "hydraulic," as in Figure 283.

Here and there along the rivers and the coast are many Eskimos. Most of them live not along the Arctic Coast, but in western Alaska, south of the Arctic Circle. Many of them have made their livings by catching fish, seals, and other animals of the sea or land. The government now is teaching them how to raise reindeer, so that they need not depend wholly on wild animals. The picture in Figure 284 was taken near Nome. This reindeer herd was raised partly to supply reindeer meat to ship to Seattle.

A look ahead. — As you can see even from these brief accounts of different parts of Alaska, the territory some day doubtless will support many times the number of people who now live there. However, the "opening up" of this great Northland is of necessity slow. Alaska's great handicaps are the difficulties of travel and transportation in most parts of it, and the fact that there is now little demand for most of the things which it can produce.

The Hawaiian Islands

Far-away Pacific islands. — Find again the Hawaiian and Philippine islands on the map in Figure 15. Although these islands are far away from the States, you would see, if you were to visit them, many things which suggest that they are not in out-of-the-way places. How do Honolulu and Manila (Fig. 285) differ in size from Alaskan towns (Fig. 279)? The work which you could see carried on in these thriving island ports suggests much trade with many places. If you were to walk along their business streets, you probably would meet people from various countries in Europe and Asia, as well as Hawaiians, Filipinos, and people from the States. You would see advertisements in several languages, and in the harbors you probably would find ships from several continents. Is this surprising? Why or why not?

You doubtless would be especially surprised at the kinds of cargoes which are being loaded on to ships to be taken to the States, for many of them are the products of *farms*, and you learned that in Alaska farm products were among the things which could not be shipped long distances with profit. Do the maps in Figure 285 make you think that there is much or little lowland for farms in these islands?

As you study about the islands, find reasons, (1) why they ship farm products to mainland United States in spite of their distance from it and (2) why they are rather densely populated.

Farm lands in the Hawaiian Islands. — In Figures 286, 287, and 288 you can see some of the farms of the Hawaiian Islands. Although much land in the islands is mountainous, there are thousands of acres which can be cultivated in lowlands near the coast and in valleys. Most of the valley lands shown in Figure 286 are being used for rice and bananas. What does this lead you to think about the rainfall and growing season in this valley? Some of the higher lands, however, are too cool for bananas, and rainfall varies greatly from place to place. Winds there come much of the time from the northeast. Which lands would you expect to receive most rainfall, then, those on the northeastern side of the mountains or those on the southwestern side? Why (p. 55)? Just a few miles away from farms where rainfall is abundant, you could find, at some places in the islands, lands which need to be irrigated in order to produce crops. Bananas are better suited to the rainier, warmer lands than to dry lands or to the higher, cooler districts.

Sugar cane and pineapples. — By far the most important crops in the islands are those shown in Figures 287 and 288. So much sugar is produced there that the Hawaiians sometimes are called "sugar islands." Pineapples are the next most valuable crop, but are of much less importance than sugar.

Cane is grown on both irrigated and rainy farm lands. Cane growers there have some advantages which those in the coastal mixed-farming region of the States do not enjoy. Since there is no danger of frosts in the "sugar lands," which are all less than two thousand feet in elevation, the cane has a longer time in which to ripen, and so produces more sugar than it would if cut at an earlier stage. Moreover, it is planted only once in several years, whereas many Louisiana growers plant it every year. It requires less labor, then, to produce sugar in Hawaii than in Louisiana. The people of the States use much more sugar than is produced in the coastal mixed-farming region. In their tropical islands, the Hawaiians can grow some products which are needed in the States, and they have, moreover, conditions more favorable for raising these crops than are found in southern United States. Does not this help you to see why it pays to send certain farm products from the Hawaiian Islands while it does not pay to send farm products from Alaska?

At the "cross-roads" of the Pacific. — Hawaii has another advantage which Alaska does not have. It is difficult for many ships to carry enough fuel for a voyage all the way across the wide Pacific, and it is convenient for them to have a coaling, resting, and repair place along the way. From the map in Figure 15 you can see that the Hawaiian Islands,

PHILIPPINE ISLANDS
Miles
0 50 100 150 200
LUZON
Manila
Manila Bay
SOUTH CHINA SEA
PACIFIC OCEAN
MINDORO
Albay
SAMAR
MASBATE
PANAY
LEYTE
CEBU
Cebu
NEGROS
BOHOL
PALAWAN
SULU SEA
MINDANAO
CELEBES SEA
PORTO RICO
ATLANTIC OCEAN
San Juan
Virgin Is.
St. Thomas
ST. THOMAS (U.S.)
PORTO RICO
Mayaguez
Ponce
Guayama
CARIBBEAN SEA
Miles
0 20 40 60
SAINT CROIX (U.S.)
CARIBBEAN SEA
More than 1,000
500 to 1,000
Sea Level to 500
Colon
REPUBLIC OF PANAMA
PANAMA CANAL
Locks
Gatun Lake
CANAL ZONE
Lock Locks
Panama
Bay of Panama
Miles
0 5 10 15
CANAL ZONE
HAWAIIAN ISLANDS
Miles
0 10 20 30 40 50
KAUAI
OAHU
Honolulu
MOLOKAI
MAUI
PACIFIC OCEAN
Mauna Kea (Vol.)
HAWAII
Mauna Loa (Vol.)
Kilauea Crater
LEGEND FOR ALL MAPS
ELEVATION IN FEET
More than 10,000
5,000 to 10,000
2,000 to 5,000
1,000 to 2,000
Sea Level to 1,000
(See separate legend for Canal Zone)
Capitals
SYMBOLS FOR CITIES & TOWNS
More than 100,000 Population
50,000 to 100,000
25,000 to 50,000
Other Towns
Principal Railroads
GENERAL DRAFTING CO. INC., N.Y.

Figure 285

Figure 286 © Ewing Galloway

Figure 287 By courtesy of the Santa Fé Railroad Company

Figure 288 © Ewing Galloway

in mid-ocean, are well located for such a stopping place. Moreover, they have valuable products to ship, and need many things which ships bring from other lands. Just as some cities in the United States profit by being on "through" land routes, so Honolulu profits by being on "through" sea routes. Thus, while farther away from the States than southern Alaska is, the islands are less "out-of-the-way." Does not the fact that Honolulu is a sea-route center help you to explain why you could see ships and people from many lands there?

Other work. — Manufacturing in the Hawaiian Islands, like trade, is closely related to farming. About three-fifths of all the people engaged in manufacturing there work in sugar mills, or in factories in which pineapples are canned. In Honolulu there is work in hotels, stores, and offices, such as is carried on in any modern city. There is little logging and mining in the islands, but manufacturing, trade, and above all the raising of farm products, especially sugar, supply work for thousands of people.

Figure 289

© Publishers Photo Service

The Philippine Islands

Philippine farming. — In the Philippines, too, the chief work is agriculture. About two-fifths of all the people who live there are farmers. Although only about a tenth of the land is tilled, farming helps largely to explain why there are so many people in the islands.

From the following paragraphs, you can find a striking difference between farming in the Hawaiians and in the Philippines, and reasons for the difference.

" Trade " crops and " home food " crops. — Hawaiian farmers have found that, largely because of good trade conditions, it pays them to buy much of their food from other countries and to use most of their farm lands for raising sugar to sell. The Philippines are farther from the States than the Hawaiian Islands are, and are not near so many " through " sea routes. Philippine farmers use less of their farm land for trade crops than the Hawaiians do, and more of it for food crops to be used at home. Moreover, there are several trade crops besides sugar which people of the Philippines have found they can raise and ship profitably. These facts help to explain why no single crop is so important in the Philippines as sugar is in Hawaii.

Among the crops raised for food, rice is most important. More than half of all Philippine farm land is used for growing it. In addition, much land is used for corn, vegetables, and tropical fruits. Sugar, coconuts, abaca, and tobacco are the more important trade crops.

Coconuts and abaca. — Near the coasts of many of the islands and especially in southern Luzon (Fig. 285), there are hundreds of thousands of coconut palms. The nuts of these trees furnish important products for trade. In Figure 289, you can see coconuts being floated downstream to the coast. The meat of some coconuts is dried, and shipped as " copra." From others is pressed oil to be used in making soap and other products. Much coconut oil is shipped from the Philippines to the mainland of the United States.

Figure 290 *By courtesy of the International Harvester Company*

Figure 292 *© Ewing Galloway*

Figure 291 *By courtesy of the International Harvester Company*

Figure 293 *© International Film Service*

A field of abaca or Manila hemp (Fig. 290) looks much like a field of bananas. Abaca fibers, because of their great strength, are much in demand for making rope. The plants are cut, usually at the age of about three years, and the fibers are then scraped from the stalks and dried as in Figure 291. Abaca is not grown in large quantities anywhere else in the world. Do these facts help you to see why it pays to ship abaca fibers long distances?

Glimpses of other work in the Philippines. — Philippine manufacturing, like that of the Hawaiians, is closely related to agriculture. Sugar mills, oil mills, and tobacco factories illustrate this fact.

In Manila, you might see, along streets such as that shown in Figure 292, stores, hotels, and other signs of work and life much like those in any modern city. The picture in Figure 293 shows another part of the city. What signs of tropical life can you find in it? The animal hitched to the cart load of bananas is a carabao or water buffalo. Carabaos are well suited for work in hot, wet lands and are by far the most important work animals of the islands.

The houses and the covers for fruit along the street shown in Figure 293 suggest forest products. Tropical forests cover almost two-thirds of the islands, and from them the people get many useful products. About five million people there live in houses of bamboo roofed with leaves of the nipa palm. Ferns, bamboos, palms, and rushes furnish abundant material for baskets, hats, matting, and furniture. There are trees from which wood somewhat like mahogany can be cut.

Figure 294 © International Film Service

Some lumber, gum, and other forest products are exported.

Many people of the islands live in villages much like that shown in Figure 294. How does the picture suggest a tropical land? Parts of the islands are difficult to reach, and very little known. To some of the more out-of-the-way places, only narrow trails lead. In several districts there still are tribes of people who have had little contact with the civilized peoples of the islands.

A look ahead. — In the future, much more land in the Philippines probably will be used for farms than is now so used. It is thought, too, that there are valuable minerals in some parts of the islands. As need for forest products becomes greater, more use probably will be made of Philippine forests. There is much opportunity, then, for development, and, as time goes on, these agricultural islands probably will support a population greater than they now have.

The Canal Zone

From Pacific to Atlantic islands. — In going from the Philippines to Porto Rico by boat, you probably would pass through the Panama Canal (Fig. 15). The boat which you see in Figure 295 is passing through this canal. The narrow strip of American land which borders the canal is called the Canal Zone. From the map of the Canal Zone in

Figure 295 © Wide World Photos

Figure 285, find about how long a trip through the canal would be. What other things about the Canal Zone can you find from this map? Find from Figures 7 and 15 what route your boat might follow if there were no canal between the Pacific and Atlantic. It has been said that the canal brought the Pacific and Atlantic States much nearer each other by sea. Can you explain what this statement means?

Porto Rico

An Atlantic island. — At what Porto Rican port (Fig. 285) do you think you probably would land if you were to visit this island? Notice that San Juan and Honolulu are about the same distance from the equator. What other facts does the map show about Porto Rico? What does your answer lead you to expect about the kinds of country and of work which you would see there? As you read about this island, check your answers and find all the facts you can which help to explain why it is so densely settled.

Harbor scenes. — In Figure 296, you are looking across part of the harbor of San Juan. From its wharves are shipped various products of the island. If you were to watch closely the work along its shores, you would find signs that Porto Rico, too, is a "farm" island, for you might see sugar, tobacco, coffee, and fruits being loaded on to boats, and much package freight being unloaded.

Figure 296

Photo by Mosciani. By courtesy of R. D. Salisbury

Figure 297

© Ewing Galloway

"Sugar-land" work. — Crops occupy a larger part of the land in Porto Rico than they do in either the Hawaiians or the Philippines. In the lowlands which border the coasts, much land is planted in sugar cane, the chief Porto Rican crop. Winds in Porto Rico blow mostly from the northeast, and, as you should expect, most of the cane fields south of the mountains are irrigated. Cane growers in Porto Rico have advantages much like those of Hawaiian planters, and are not so far from markets in the States. Porto Rico, too, is a trade crop island. Figure 297 shows a large, modern sugar mill west of Ponce (Fig. 285). Much of the sugar from these mills goes to refineries in New York City (p. 14).

Good roads. — You well might marvel at the hundreds of miles of excellent roads in Porto Rico. You find them not only in the lowlands, but also, as you can see in Figure 298, in mountainous places. By building such roads and also railroads, the United States government has made it possible for cane and other products to be brought from many plantations to the ports much more cheaply than formerly was possible. This helps to explain why so much land in the island is used for trade crops.

Other farm lands. — Notice in Figure 298 the hillside farms. Even on many steep

Figure 298 *Photo by Moscioni. By courtesy of R. D. Salisbury*

Figure 299 *By courtesy of R. D. Salisbury*

Figure 300 *By courtesy of R. D. Salisbury*

slopes the soil is so good and the rainfall so abundant that crops can be raised there. Tobacco and coffee are grown for the most part on the hillsides and in inland valleys. Tobacco for cigar wrappers is grown under cheesecloth covers such as those you see in Figure 299, to give the leaves a light color, and to protect the plants from insects. There are also many uncovered tobacco fields, some of which are at least a thousand

Figure 301 *By courtesy of R. D. Salisbury*

feet above sea level. Most of the pineapples, oranges, and other fruits for trade come from a coastal district west of San Juan.

A "living" in Porto Rico. — In Figure 300, you can see a Porto Rican farm home. Do you think it was expensive to build? Why? In Porto Rico people spend much time out of doors and can live very cheaply. They need few clothes, and their food consists largely of home-grown fruit, and of beans and salt fish which are imported from the States. On a very small farm a family can earn enough on which to live in this inexpensive way. This fact helps to explain why farm lands in Porto Rico support so many more people than the same amount of farm land in the States does.

An agricultural, trading island. — Manufacturing work in Porto Rico is largely that which is done in the homes, or that which uses farm products. The island has no mineral resources.

It is by reason chiefly of (1) much fertile land, (2) its climate, (3) good conditions for trade with mainland United States, and (4) good roads, that this rather small agricultural island supports more than a million people.

Exercises

1. On the map in Figure 15, find Guam, in the Pacific. In a harbor there, you might see vessels of the American navy, boats that bring to the island coal for vessels, and other American ships. You would find some men there at work receiving and sending cable or radio messages. It is convenient for the United States to have supply and "message" stations for American ships not only in the Hawaiian and Philippine islands, but also at several other places in the Pacific. Notice that Tutuila and Manua, in the Samoan group, belong to the United States. There is an American naval station on one of these islands, and a cable station in the Midway group (Fig. 15). How does the location of each of these islands or island groups help you to see why places in them have been chosen for such work? The American Virgin Islands (Fig. 7) are useful for similar purposes.

2. On the map in Figure 15, find the following less important American islands: Wake, Baker, Howland, Christmas, Johnson, Swains, and Jarvis. What reasons can you give for the fact that some American islands are more important than these?

3. Each year many tourists visit Alaska, Hawaii, Porto Rico, and other scattered American lands. Make lists of facts about these lands that help to explain why. What reasons for the attractiveness of some of them does Figure 301 suggest?

4. What reasons have you found for the difference in the number of people per square mile in Alaska and in other scattered American lands?

By courtesy of the Royal Canadian Air Force

Figure 302

CANADA

Comparisons. — A trip across southern Canada is much like a trip across the northernmost part of the United States. The scenery and the ways in which men are using the land are similar. Do you not see, for example, in Figure 302, a view of Canada's greatest city, signs of various kinds of work which you saw in the greatest city of the United States? From what the map in Figure 303 tells you, and from what you have learned about the parts of the United States which border Canada, you should be able to "picture" much that you would see on a trip across that country.

Canada is divided into smaller parts which are somewhat like states. In Canada, however, these parts are called "provinces." The whole of the country is called the "Dominion of Canada." It is a part of the great British Empire, which, as you later will see, is made up of lands in many parts of the world. Find on the map in Figure 303 the province of British Columbia. From a study of the maps in Figures 303 and 27, decide which states you think British Columbia most nearly resembles. From what you have learned of the ways in which men make their livings in those states, tell what kinds of work you would expect to see in British Columbia. From Figures 302–319, select two pictures which you think might have been taken in this province. Tell what these two pictures show which led you to select them.

After making similar comparisons of the provinces of Alberta, Saskatchewan, and Manitoba with the states nearest them, choose from Figures 302–319 three pictures which you think probably were taken in these provinces. What work regions which you saw in the United States do you think probably extend into these provinces?

Find three pictures in this group (Figs. 302–319) which recall New England, and which you think therefore probably were taken in the southeastern provinces of Nova Scotia, New Brunswick, or Prince Edward's Island. Then check all of your selections with the List of Illustrations.

In what part of Canada do you find all its principal railroads and larger cities (Fig. 303)? In what parts do you find no railroads and no cities? In what part of Canada, then, do you think most of the people live? The well-settled part of Canada has been likened to a wasp whose waist is at Winnipeg. Notice how narrow the belt of railroads is there. Does it not surprise you to find that the railroad belt extends farther north in Alberta than it does in central Canada? Imagine a line drawn

Figure 303

from Sault Ste. Marie to Montreal. Does the map show that many or few people live in the part of Canada south of this line? Do you find any other part of Canada in which there are so many large cities? How does the general distribution of people in Canada, as suggested by its railroads and cities, compare with the distribution of people in the United States?

It might be said that Montreal is Canada's "New York City," southeastern Ontario its "New York State," Fort William and Port Arthur its "Duluth and Superior," Winnipeg its "Chicago," and Vancouver and Victoria its "Seattle and Tacoma." What do each of these comparisons suggest to you about these places in Canada? What reasons does the map in Figure 303 suggest to you why these are helpful comparisons?

Has your study of Canada thus far not suggested other likenesses and differences between your country and Canada? If so, what are they? Did you wonder why you found in Figures 302–319 no landscapes like those of the "corn belt" (Figs. 114, 116, and 117)? None like those of our cotton, rice, and sugar lands (Figs. 130, 131, 133, and 134)? Has your study suggested to you other questions that you wish to ask about how people in Canada fit their ways of living into the kinds of lands in which they live? If so, what questions?

Directions for reading. — Though in many ways Canada and the United States are much alike, there are, as you have seen, interesting differences between them. As you read the following pages, check the likenesses and differences you already have found, and list all the others you learn about.

Figure 304 *By courtesy of the Geological Survey of Canada*

Find all the facts you can which help to explain these likenesses and differences.

Northeastern and Central Canada

"Around" Hudson Bay. — Find on the map in Figure 303 the parts of Canada that stretch from Hudson Bay eastward to the Atlantic, southward to the northern shores of lakes Superior and Huron, westward to lakes Winnipeg, Athabaska, Great Slave, and Great Bear, and northward to the Arctic. More than half of Canada is included in these northeastern and central parts of the Dominion which lie around Hudson Bay. Yet in this vast area few people live. Indeed, some of it has been little explored. As you read about the kinds of work for which various parts of it are fitted, find reasons why so few people live there.

In Eskimo land. — Find on the map in Figure 128 the Canadian lands that are north of the forest area. These lands are Arctic prairies much like those of northern Alaska. Here and there along the northern coast of the mainland, and the coasts of some of the many Arctic islands, there are Eskimo villages. Figure 304 is a picture of an Eskimo summer camp on the treeless Arctic plain. In Figure 305, you see winter homes in Arctic Canada.

The Eskimos depend for food and clothing largely on seal, walrus, and other sea animals which they hunt, especially in winter,

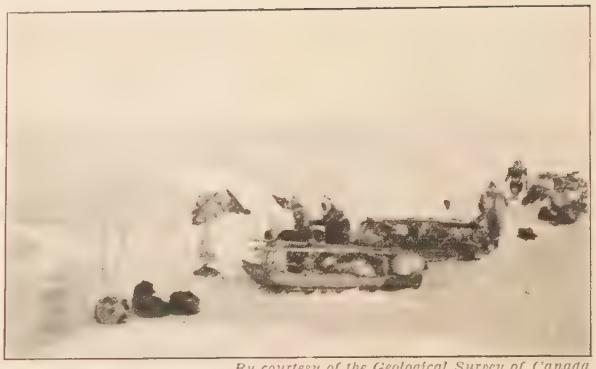


Figure 305 *By courtesy of the Geological Survey of Canada*

and on musk oxen, caribou, and other land animals which they kill in the summer. During their summer land-travels, they also gather wild berries, and, in some places, branches of small stunted trees. Their "automobiles" are dog sleds and kayaks, or skin boats. They move from place to place in search of better hunting. Do you think they would move their summer houses with them (Fig. 304)? Their winter houses (Fig. 305)? Tell why. Although some white men who were explorers or fur traders have seen this Eskimo land, do you wonder that it has been visited by few outsiders?

Forests and furs. — Southward from the Arctic prairies, and, in some places, from the northern coast itself, extend vast coniferous forests (Fig. 128). As you might expect, trees near the northern edge of the forest belt tend to be dwarfed, as do those on high, cold, mountain slopes. In these great, lake-dotted forests live many fur-bearing animals, and Indians who make their living by trapping them and trading furs. Rivers are the only highways through much of the forest. Fur companies have established trading posts at various places to which trappers can bring furs. Some are near the mouths of streams which flow into Hudson Bay, and others at or near places where two or more streams join. In Figure 306, you can see furs which have been collected at one of the Hudson Bay Company's posts.

Figure 306

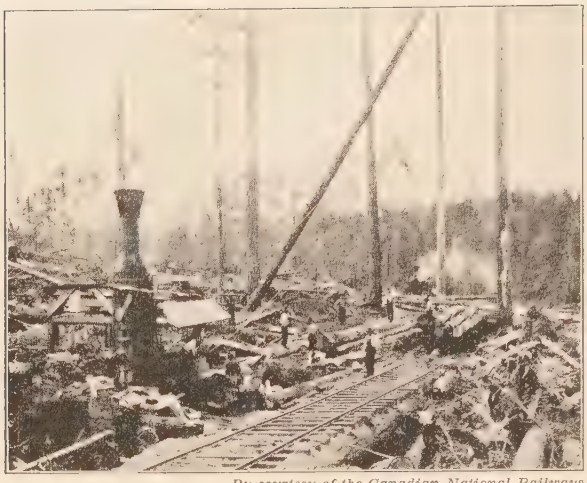
The Indian trappers lead lonely lives. Throughout the winter they camp at places where they think animals may be caught. They set their traps within a few hours' walking distance from camp, and almost every day make a round to examine some of them, reset them, and bring back the furs of any animals they may have captured. This work is done largely during the winter because then the fur is thickest and the pelts best. At the end of the season, the trappers pack in canoes the furs obtained during the winter, and take them to a trading post, in some cases hundreds of miles away. There they exchange them for supplies to carry back into the wilderness.

In the southern part of the forest belt there are many districts where logging is carried on. Work in the lumber camps there is much like that in the camps of northern Minnesota (p. 106), Michigan, and Maine. What "pictures" does this statement bring to mind? Does it not suggest, for example, log buildings, the snaking of logs over snow to the banks of near-by streams, and spring "drives"? As in these states, too, there are in places large tracts of cut-over or burned-over lands that are now dreary, barren wastes.

Little farming. — You might expect to find much of the cleared land in the southern part of the forest belt used for farms, as is done in parts of Wisconsin, Michigan, and other states south of the area. Much of the cleared land, however, is unsuited for farms. Except in river valleys and in places where there formerly were lakes, the soils of northeastern and north-central Canada are for the most part thin and stony. Although they support trees, they are poor for farm crops. Lands are tilled only in places where the soil is thicker. What have you learned about the work of streams which helps you to explain why the thicker soils are to be found in river valleys and in places that once were lake beds? Do you not wonder why soils in northeastern and north-central Canada are in general thin and poor, while in north-central United States, to the south of this area, the soils in most places are thick and fertile? The chief answer is that northeastern and north-central Canada, like the uplands of New England (p. 174), was scoured by great glaciers.

Some of the materials removed from this section of Canada by the great ice sheets were carried by them to lands farther south and west and dropped there. This helps to account for some of the rich soils in the states of the northern interior of the United States. The very ice sheets which helped to make much of northeastern and north-central Canada a land where few people can make their living by farming helped to make much of northeastern and north-central United States a land which supports millions of people by agriculture.

Interesting discoveries. — Railroads were built through the forest belt along a strip of land just north of lakes Huron and Superior, chiefly in order to connect the richer lands of southeastern and western Canada. However, in blasting certain cuts through which these railroads were to pass, valuable deposits of silver and of nickel were found, and in recent years much silver and about nine-tenths of all the nickel mined in the world, as well as three-fourths of the gold produced in Canada, have come from this



By courtesy of the Canadian National Railways

Figure 307

district. Copper ore, iron ore, and ores of other kinds also have been found there, and it is thought that other rich mineral deposits will be discovered. Here and there along the railroads, mining towns and sawmill towns grew, and on some of the more fertile lands farming settlements were made. As in northeastern Minnesota, however, mining and logging are more important than farming.

In which area would you expect to find more people, one in which men are engaged mostly in logging, mining, and trapping, or one of similar size in which most of the land is used for farms? How, then, do the uses of land in northeastern and central Canada help you to explain why comparatively few people live there?

Western Canada

Similar western neighbors. — If you were to visit British Columbia, you would find scattered mining, farming, grazing, lumbering, and fishing settlements much like those of Washington, Oregon, Idaho, and northern California. In what sorts of places would you expect to find each of these kinds of settlements? Of what kinds of work do you see signs in Figure 307? As you might expect from the great forests and from various facts you have learned about the province,

By courtesy of the Canadian Pacific Railroad

Figure 308

rainfall near the coast and on some of the western mountain slopes is very heavy, while in most of the inland valleys, and on the eastern slopes of the ranges, it is much lighter. As in our Northwest, the rainfall is heavier between September and March than between March and September. Away from the coast in the northern part of the province and also in Yukon Territory (Fig. 303) winters are longer and colder than in the southern part, and much of the precipitation is in the form of snow. Forests there are dense, but not so rich in the larger, more valuable kinds of lumber trees as those of southern British Columbia are.

As Figure 308 suggests, railroads follow routes through valleys and mountain passes, as in Western United States. Notice, however, that in Canada the Great Plains extend farther west than in the United States (Figs. 16 and 17), and that the western mountain belt is narrower there. Vancouver (Fig. 309), near the southern end of the

Figure 309

By courtesy of the Canadian National Railways

coast of British Columbia (Fig. 303), and Prince Rupert, near the northern end of the coast, have grown at good harbors where the railroad routes which cross the mountains meet sea routes. How does the map (Fig. 303) help you to see why Victoria, though it is the capital of British Columbia, is not nearly so large as Vancouver?

In Figure 309, what do you see in the background which helps to make Vancouver an attractive place? Would you not expect the beautiful scenery of the coast and mountains and the cool summer weather of western Canada to attract many visitors? As in the United States, some of the more lovely and interesting places have been set aside as parks, and hotels have been built in them to care for the people who come to enjoy the beauty of these western lands. Many tourists who go from central or eastern United States to the Pacific Coast, go one way across western United States and the other across western Canada. On the maps in Figures 23 and 303 trace routes for such trips.

Helpful graphs. — With the aid of the following directions, make graphs for your notebooks which will help you to compare the values of various products of British Columbia in a recent year. In a column headed "Mines," make thirty-nine dots, spacing them an eighth of an inch apart. Each dot will stand for a million dollars' worth of mined products. Print "C's" for coal after the first fourteen, "L's" for lead after the next five, "S's" for silver after five, "G's" for gold after four, and "Cp's" for copper after four. The unlettered dots stand for the value of all other mined products. In a column headed "Fisheries," put fourteen dots. In one headed "Forests," put thirty-four dots. In one headed "Farms," put forty-three dots. Print "A's" after the first seven of these to stand for apples, "D's" after nine for dairy products, "H's" after twelve for hay, "W's" after two for wheat, and "O's" after two for oats. The other dots stand for the value of potatoes and of various other less important vegetable, fruit, and grain crops. Are not the leading farm products those you would expect to find there? Tell why. Which is by far the most valuable mined product?

For Yukon, two dots would stand for the value of all mine, forest, fish, and farm products. What does this show you about Yukon? Gold mining is by far the most important work there at present.

Figure 310

By courtesy of the Canadian National Railways

Figure 311

By courtesy of the Canadian National Railways

The two "Wests." — Though Canada's "West" is smaller than our "West" and has fewer people, its lands are used much as are those of Western United States. Except for the fact that one is part of Canada and the other of the United States, the two "Wests" are really one.

The Prairie Provinces

Wheat lands. — Alberta, Saskatchewan, and Manitoba commonly are spoken of as the prairie provinces of Canada. However, the prairies which give them this name are found only in their southern parts, and across their northern portions stretches the great forest belt of Canada (Fig. 128). This vast prairie country which extends from Winnipeg westward to the Rocky Mountains is one of rather light rainfall, but of rich soils. As you would expect, much of the land is used, as is that shown in Figure 310, for raising wheat. Here there are twice as many acres of cereals as in all the remainder of Canada, and wheat is grown on almost two-thirds of them. More than nine-tenths of all the wheat lands of the Dominion are in the prairie provinces. More and more mixed farming is being done, but wheat is by far

Figure 312 *By courtesy of the Canadian National Railways*

Figure 313 *By courtesy of the Canadian National Railways*

the most important crop. Oats are raised as a feed crop on more than half of the cereal land not used for wheat, and barley, rye, and flax are less important crops. As you would expect, nearly all of the wheat is spring wheat. The very long summer days are an advantage to the farmers. Do you see how?

Other prairie-land work. — Much prairie land, especially in the southwestern, drier part of Alberta, is used, as is that shown in Figure 311, for grazing. Many towns in the prairies look like the one which you see in Figure 312. What signs of the chief work of the prairies do you see in this town? In Figure 313, you see the buildings of a coal mine in western Alberta. This province produces about a third of all the coal mined in Canada. Coal is by far the most valuable mineral product of the prairie district. Indeed, the value of the coal mined there is about seven-eighths of that of all mine products.

If you were to make a graph of the values of various products for the prairie provinces similar to the one you made for British Columbia, it would show that the value of farm products is about thirteen times as great as in British Columbia. On the other hand, the value of mine products is only about three-fourths as great, the value of fish products only about one-ninth as great, and that of forest products only about one-fourteenth as great as in British Columbia. Is the value of the farm products of the prairie provinces great or small as compared with the value of their mine, forest, and fish products? Does not this fact help you to see that Manitoba, Saskatchewan, and Alberta might well be called the prairie farming

Figure 314 *By courtesy of Natural Resources Intelligence Service, Canada*

provinces? Had you thought of this name?

The railroad gateway. — What is the only city of these provinces in which there are more than 100,000 people (Fig. 303)? This city, third in size in Canada, resembles in several ways the second largest city of the United States. Just as in the States railroads from the west and northwest center near the southern end of Lake Michigan, so in Canada they center near the southern end of Lake Winnipeg. Winnipeg, then, is the railroad gateway between eastern and western Canada. Great elevators, stock yards, and wholesale houses from which goods of many kinds are distributed to the vast western districts, are signs of the more important kinds of work which the railroads help to make possible in the city.

Southernmost Quebec and Ontario

A trading and manufacturing district. — In Canada, just as in the United States, the section in which there are most people lies between the Great Lakes and the Atlantic, where conditions are best for the growth of trading and manufacturing centers.

To trace the eastward movement of wheat from the prairies will help you to see the relation of southernmost Ontario and Quebec to some of the great trade routes of the Dominion. In a recent year about a tenth of the wheat produced west of Winnipeg went all the way by rail to Montreal (Fig. 303). More than half of the western crop came to Port Arthur and Fort William for shipment by lake. Do you see why it came to the westernmost two of the Canadian harbors on Lake Superior? What two signs of this great grain trade at Fort William do you see in Figure 314? More than half of the wheat shipped from Port Arthur and Fort William went to lake ports in the United States, much the largest part of it going to Buffalo. Of the part which was shipped to eastern Canada, some went to Canadian ports on Lake Huron and eastward from them by rail, some to Lake Erie and Ontario ports and northeastward by rail, and some went all the way to Montreal by water, through lakes Superior, Huron, Erie, Ontario, and the St. Lawrence River. Trace these routes on the map in Figure 303. Through what canal (Fig. 207) do all these lake routes pass? Except when the St. Lawrence is frozen over in winter, ocean steamers can come up the river to Montreal. Wheat can go by water, then, all the way from Fort William to overseas ports. It does not go all this distance, however, in the same vessels. The larger lake boats, as you learned (p. 198), cannot go through the Welland Canal (Fig. 207), and large ocean boats cannot go above Montreal. The handling of Canada's wheat crop after it is harvested alone furnishes work for many people.

Figure 315 *By courtesy of the Canadian National Railways*

Do you not see that the part of Canada

Figure 316 *By courtesy of the Canadian National Railways*

between Lake Huron and Montreal is in a position with regard to trade routes which is similar to that of New York state? Cities and towns along the rail and water routes of this district, like those along the routes between Buffalo and New York City, are favorably located for receiving and shipping many materials, and, as you would expect, much manufacturing is done in these exchange centers. What cities do you find in this district (Fig. 303)? Had not the number of large cities there already suggested much trade and manufacturing to you?

Other work in this district. — Trade and manufacturing are encouraged in southernmost Ontario and Quebec not only by location with regard to trade routes, but also by the farm, mine, and forest work done in or near the district. There are many country people, as well as many city dwellers, there.

You already have learned of some of the mineral and forest wealth in the parts of Ontario and Quebec which border this district on the north. In southern Quebec, moreover, there is mined much of the asbestos of the world. These near-by mining and logging districts supply raw materials for trade and manufacture. Had you noticed, however, that petroleum, coal, and iron ore were not named among the riches of the district? Although some iron and steel are manufactured in this part of Canada, both the coal and iron ore which are used are brought from elsewhere. Iron ore is brought from Minnesota, and most of the coal comes from mines in the United States which are nearer the district than Alberta mines are. Do you see, then, that at places along the Canadian shores of the Great Lakes, coal and iron ore cannot be brought together so conveniently as they can along the *southern* shores of Lake Erie and Lake Michigan?

The lack of coal in southern Quebec and Ontario is offset in part by the abundance of water power there. Power is obtained not only from Niagara Falls (Fig. 239) but also from many other places.

The soils of the district are rich, and the climate is much like that, for example, of New York state. Hay, oats, potatoes, and apples are the more important crops, and corn matures in some places there. How does the oats-harvesting scene in Figure 315 differ from the western Canada farm scene in Figure 310? How does the above statement about climate help you to explain this

Figure 317

By courtesy of the Canadian National Railways

difference? As you would expect, the feeding of beef cattle, of swine, and, above all, dairying, are important kinds of work there. More than half of all the dairy cattle of Canada are in southernmost Quebec and Ontario, and most of the butter and cheese made in the Dominion comes from this district. In Figure 316, you see some of the interesting farms of the St. Lawrence Valley. Many of them are long, narrow strips of land, with one narrow end along the river. In many of these farms you might find marsh hay lands near the river, grain fields farther back, and woodland pastures on the valley slopes.

Many of the people of Canada live in southernmost Quebec and Ontario, then, because of the advantages which exist there for doing many different kinds of work. What do you think the more important of these advantages are? You should think of the district first of all, however, as Canada's chief trading and manufacturing area.

The Maritime Provinces

Neighbors who farm similarly. — Nova Scotia, New Brunswick, and Prince Edward's Island are called the maritime provinces. The farms of these provinces resemble those of Maine, Vermont, and New Hampshire. This fact should at once suggest to you neat, attractive farm homes in valley lands which are used largely for hay, oats, potatoes, vegetables, and apples. At the time of the last Canadian census, Nova Scotia produced an apple crop worth more than that of any other province. Are not the farm lands in Figure 317 much like those in Figure 219? Does not the potato-harvesting scene in Figure 318 recall especially northeastern Maine?

City comparisons. — As in the three northernmost New England states, there are no cities of more than 100,000 people in the maritime provinces. Halifax (Fig. 303), the largest port in Nova Scotia, like Portland,

Figure 318 © Ewing Galloway

Figure 319 By courtesy of the Canadian National Railways

the largest city of Maine, has more trade in winter than in summer. You have learned that the harbor of Montreal is ice-bound in winter. During the closed season there, Canadian meat and grain are shipped by rail to Portland (p. 188) and to ports in the maritime provinces for export. Which port is nearer Montreal, Portland or Halifax?

Fishing and forest work. — Along the coasts of the maritime provinces, many people make their living by fishing. Fishing is not centered in as few places as it is in New England, and much is done near the coast from small boats in which fishermen go to and from their work daily. Larger deep-sea fishing vessels, much like those of New England, stay for several weeks at sea. Here and there you might see scenes like that in Figure 319, as well as cod-drying platforms like those of Gloucester (Fig. 225). Much of the fish is salted or dried for shipment to other lands. Halifax is the chief fresh fish market, and from this city, as from Boston, fresh fish are shipped in refrigerator cars to cities of the interior. Much fish is canned; indeed, about three-fourths of the canneries of the Dominion are in the maritime provinces. Although deep-sea fishing is carried on throughout the cold and stormy winter, little inshore fishing is done then, and so many of the shore fishermen find work during the winter months in logging camps.

Forest work in the district is much like that in New England. There now are many acres of cut-over and burned-over lands, and Quebec, Ontario, and British Columbia each produce in a year more lumber than is cut in the maritime provinces.

An important difference. — You doubtless remember that one striking fact about New England is its scarcity of mines. Nova Scotia, on the other hand, is rich in coal, producing about a third of all the coal mined in Canada. About a third of the coal mined in the province is used in other provinces, much of it in the densely settled parts of southernmost Quebec and Ontario. Some of it is exported, and the remainder is used in the province. Iron ore which is mined near the coast of Newfoundland is brought to Nova Scotia, and about a third of the pig iron made in Canada is manufactured near Nova Scotia coal mines. However, although more manufacturing is done in Nova Scotia than in New Brunswick and Prince Edward's Island together, the value of its manufactured products is small as compared with the value of those of southern Ontario. Moreover, there is in the province no group of large manufacturing cities as in southern New England. To see a reason for this, one must think carefully about the location

of the maritime provinces with reference to the great St. Lawrence River highway.

Lands "passed by." — You have seen that in New England the greatest port grew not at the place where the land juts farthest into the sea, but on Boston Bay, where the sea extends farthest into the land. At such a place large ocean-going vessels come much nearer to the heart of the land for which they bring products and from which their return cargoes come, than would be the case if they stopped at a place where the land juts far into the sea. To do this is an advantage, for in most cases it costs less to carry products on large vessels than it does to carry them the same distance by rail. Just as Portland (Oregon), Philadelphia, and many other river seaports have grown at the farthest point upstream which ocean-going boats can reach, so Canada's greatest city has grown on its greatest river highway at the head of ocean navigation. Though far inland, it is an Atlantic seaport. Montreal, then, like New York City, is the place where most of the land routes of the country it serves meet Atlantic sea routes. To Montreal come products from the vast part of Canada west and northwest of it, and from Montreal goods are distributed to much of the Dominion. On the other hand, the ports of Nova Scotia, New Brunswick, and Prince Edward's Island are all in a part of Canada which juts into the sea. They depend largely on shipping the products of the maritime district itself, and on importing needed materials for its people.

Most of the manufacturing cities of southern New England lie between Boston, a great seaport, and the interior of the country from which many of their supplies come and to which many of their manufactured goods go. It is southeastern Ontario, not the maritime district of Canada, that has a somewhat similar location with regard to Montreal. The advantage of Nova Scotia in the matter of coal is overbalanced by the disadvantage in its location. The fact, then, that many more ocean ships go to Montreal than go to the ports of the maritime provinces not only helps to explain why so many people of the Dominion live in southernmost Quebec and Ontario, but also shows why the maritime provinces sometimes are spoken of as "the part of Canada which has been passed by."

Summary and Check Exercises

A trade problem. — State all the things you have learned about the United States and Canada which help you to explain the following facts: "Coal is shipped in large quantities from the United States to Canada. Coal also is shipped in large amounts from Canada to the United States." It will help you in thinking about this problem to know that most of the coal shipped from the United States to Canada goes to southeastern Ontario, and that coal shipped from Canada to the United States comes mostly by water from Nova Scotia to New England seaports.

A map for your notebook. — With the aid of the map in Figure 303, draw on an outline map of Canada the principal routes over which wheat is shipped from the prairie provinces to Montreal. You can trace an outline map from Figure 303 if it is not convenient to get one. Color red those routes or parts of routes which you have shown that are railroads, and color blue the sections of the routes that extend through lakes, rivers, or canals. Add to your map a route over which you think wheat would go from the prairie provinces to Vancouver. Put dots on your map to represent the important cities along the routes, but do not print any names on it. After you have completed your map, see if you can name all the important cities, lakes, rivers, and canals along your routes. If you cannot do so, look them up on the maps in Figures 303 and 207.

Word puzzles. — 1. If you name correctly the six words suggested below, the initials of the words will spell the name of one of the largest two countries of North America. (1) The leading mineral product both in Canada and the United States. (2) A very useful mineral of which Canada produces much and the United States little. (3) Another mineral, much more of which is produced in Canada than in the United States. (4) The leading fruit crop of both New England and the maritime provinces. (5) A kind of farming important in southeastern Ontario and in New York. (6) An ocean across which trade routes lead to the greatest seaport in each country.

2. If you name correctly the five words suggested below, you will find that their initial letters spell the name of a crop for which millions of acres are used in Canada and in the United States. (1) The railroad "gateway-city" of interior Canada. (2) The largest seaport in the maritime provinces. (3) People who live in the northernmost part of Canada. (4) The westernmost of the prairie provinces. (5) A large city of southeastern Ontario.

Comparing the United States and Canada. — You now have compared various *parts* of Canada with somewhat similar *parts* of the United States. The following paragraphs will help you to compare in certain ways the whole of Canada with the whole of the United States.

1. To show about how the two countries compare in size and population, make in your notebook two rectangles, one three and five-eighths inches by one inch and the other three and three-fourths inches by one inch. The first stands for the United States, including Alaska, the second for Canada. In the Canada rectangle draw one stick man to stand for all the people (8,788,000) in the Dominion. In the United States rectangle, draw twelve stick men to show that there are about twelve times as many people in the United States as there are in Canada. Then write under your graph a brief statement that two facts which help to explain the difference in population are (1) most Canadian lands are farther from the equator than those of the States and (2) a large part of Canada is ice-scoured.

2. Make a list of reasons why most people in Canada live in the *southeastern* part of the Dominion. Make a list of reasons why most people in the United States live in the *northeastern* part of this country. Check this list with the paragraph headed "Where population is densest," on page 237. Then compare the two lists you have written.

3. Fill in the blanks in the following sentences, and copy them in your notebook. "In Canada, as in the United States, a large part of the people are engaged in agriculture. In the United States, many more acres are used for —— than for any other crop. In Canada, ——, which matures in a —— growing season than corn, is by far the most important crop. ——, ——, and ——, as well as other crops that are raised in southern United States and that require long growing seasons, cannot be grown in Canada."

4. Make twenty-nine large dots in a column. Each one will stand for $5,000,000 worth of mine products. What sum, then, do the twenty-nine dots stand for? This was about the value of the products of all Canadian mines in a recent year. Opposite thirteen of the dots print "C's" for coal; opposite five of them, print "G's" for gold; opposite two, "S's" for silver; opposite one, an "L" for lead; opposite one, "Cp" for copper; opposite another, "N" for nickel; and opposite still another, "A" for asbestos. The dots which you have not lettered represent, of course, the value of all other Canadian mine products. What striking facts are shown by comparing this graph with the mine-product graph described on page 242?

5. Manufacturing is much less important, in comparison with other kinds of work, in Canada than it is in the United States. On the other hand, fishing, trapping, and logging are more important, in comparison with other kinds of work, in Canada than they are in the United States. Such kinds of work naturally are carried on earlier in a country than large-scale manufacturing. Which of these two countries, then, do you think is in the earlier stage of development?

5. Suppose that Canada should be shut off suddenly from all trade with other lands and that its people therefore had to depend entirely on the products supplied by the country itself. Suppose the same thing were to happen to the United States. Which of these two countries would have the greater variety of products on which to depend? Name at least two things that now are produced in Canada in such vast quantities that much of them could not be used in the country itself. Do you not see, then, that, in one sense, trade with other lands is even more important to Canada than it is to the United States?

Making a comparison puzzle. — You might make a list of statements, some of which are true only of Canada, some only of the United States, and others of both. Then use them to make a puzzle somewhat like the "mouth and source" puzzle (*Journeys in Distant Lands*, p. 109). Would the following statements, for example, be true only of Canada, only of the United States, or of both? (1) It is a very large, prosperous North American country, in which people find work of many kinds to do. (2) It is rich in farm lands, forests, and minerals. (3) Its future prosperity depends much upon the wisdom with which its people use its vast resources.

DOMINION OF CANADA
MEXICO
WESTERN UNITED STATES
SYMBOLS FOR CITIES & TOWNS
More than 500,000 Population (1920)
100,000 to 500,000
50,000 to 100,000
25,000 to 50,000
10,000 to 25,000
5,000 to 10,000
2,500 to 5,000
1,000 to 2,500
Less than 1,000
Miles
0 50 100 150 200
GENERAL DRAFTING CO. INC., N.Y.
Seattle
Portland
Spokane
San Francisco
SEE INSET
Los Angeles
SEE INSET
Salt Lake City
Denver
125°
120°
115°
110°
105°
45°
40°
35°

Figure 320

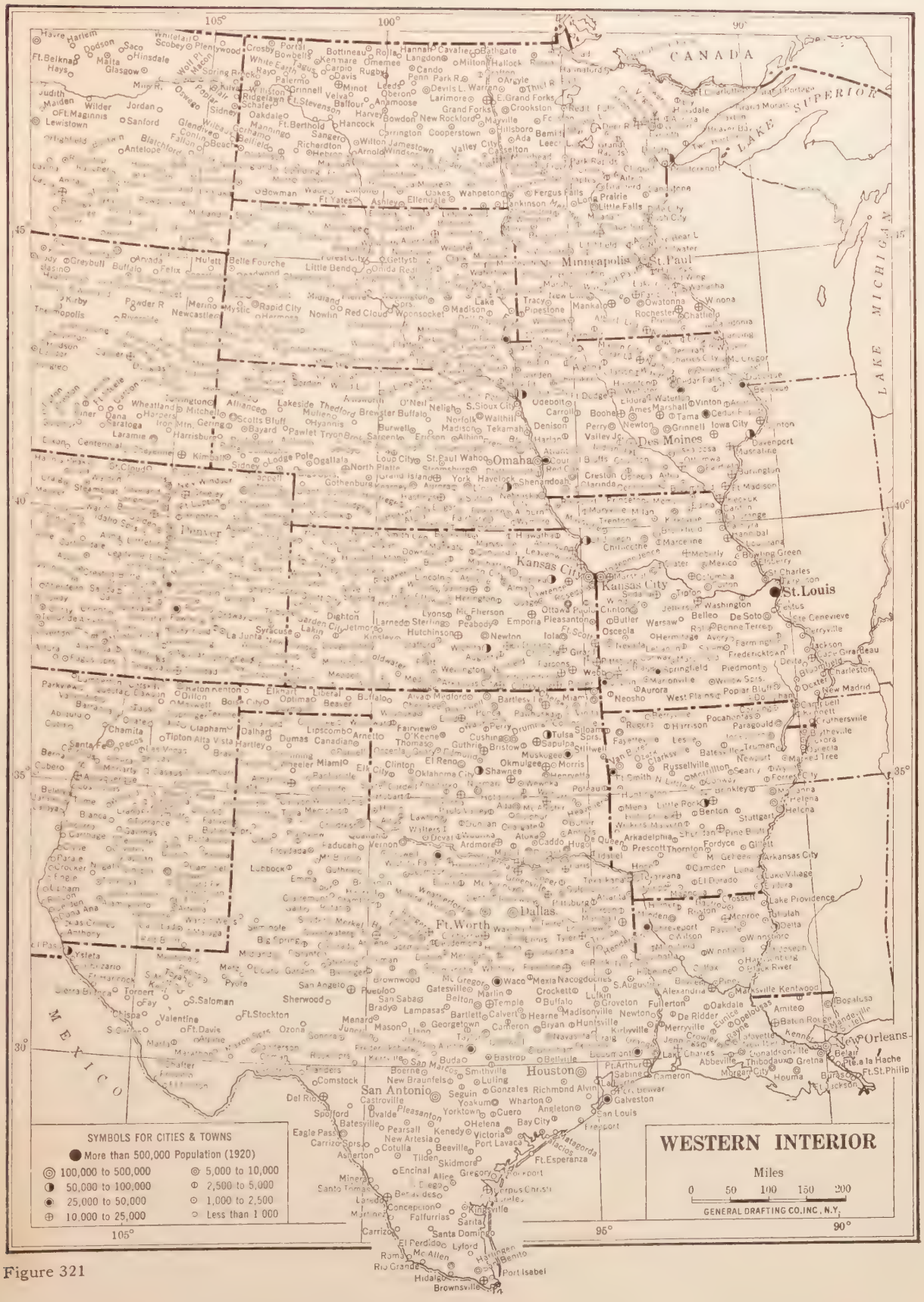
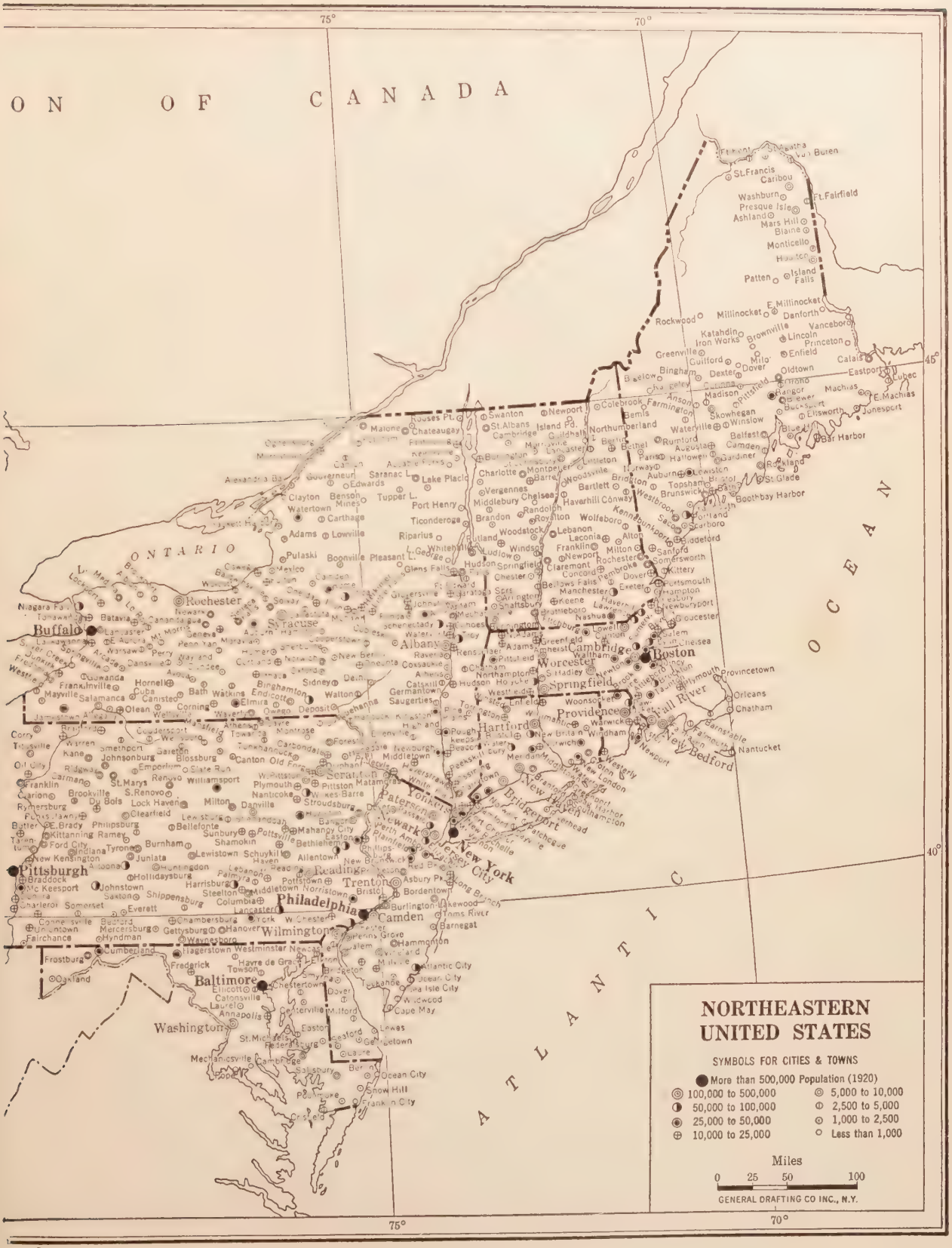

WESTERN INTERIOR
Miles
0 50 100 150 200
GENERAL DRAFTING CO., INC., N.Y.
SYMBOLS FOR CITIES & TOWNS
More than 500,000 Population (1920)
100,000 to 500,000
50,000 to 100,000
25,000 to 50,000
10,000 to 25,000
5,000 to 10,000
2,500 to 5,000
1,000 to 2,500
Less than 1 000
CANADA
LAKE SUPERIOR
LAKE MICHIGAN
MEXICO
Minneapolis
St. Paul
Des Moines
Omaha
Kansas City
St. Louis
Dallas
Ft. Worth
Houston
San Antonio
New Orleans
105°
100°
95°
90°
45°
40°
35°
30°

Figure 321

LAKE SUPERIOR
LAKE MICHIGAN
LAKE HURON
LAKE ERIE
DOMINI
90°
85°
45°
40°
Milwaukee
Grand Rapids
Chicago
Detroit
Cleveland
Toledo
Youngstown
Akron
Columbus
Dayton
Indianapolis
Cincinnati

Figure 322


ON OF CANADA
ONTARIO
ATLANTIC OCEAN
75°
70°
45°
40°
NORTHEASTERN UNITED STATES
SYMBOLS FOR CITIES & TOWNS
More than 500,000 Population (1920)
100,000 to 500,000
50,000 to 100,000
25,000 to 50,000
10,000 to 25,000
5,000 to 10,000
2,500 to 5,000
1,000 to 2,500
Less than 1,000
Miles
0 25 50 100
GENERAL DRAFTING CO INC., N.Y.
Buffalo
Rochester
Syracuse
Albany
Boston
Worcester
Springfield
Providence
Fall River
New Bedford
Hartford
New York
Philadelphia
Camden
Trenton
Pittsburgh
Baltimore
Washington
Wilmington
Reading
Scranton
Atlantic City
Portland
Bangor

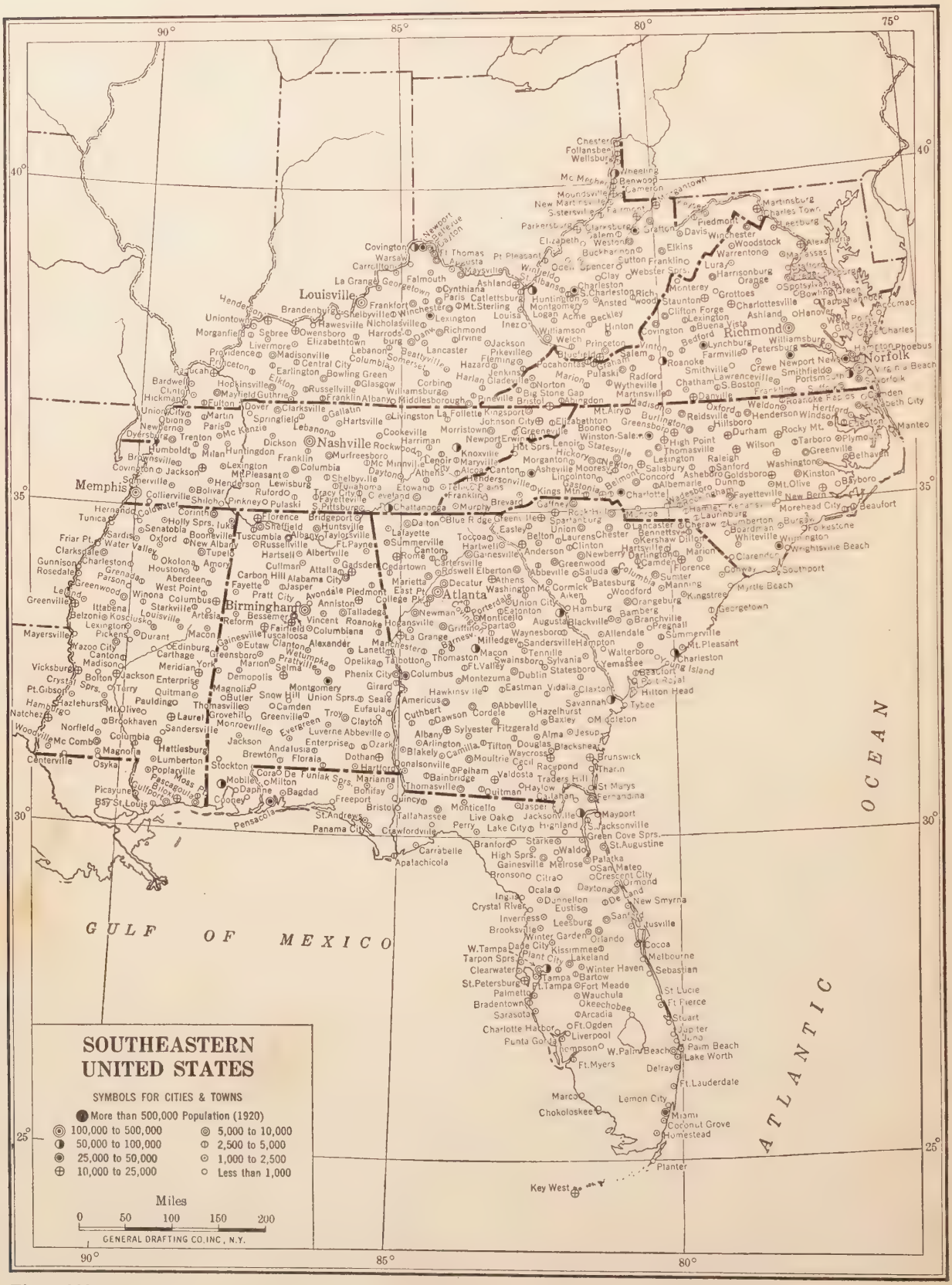

SOUTHEASTERN UNITED STATES
SYMBOLS FOR CITIES & TOWNS
More than 500,000 Population (1920)
100,000 to 500,000
50,000 to 100,000
25,000 to 50,000
10,000 to 25,000
5,000 to 10,000
2,500 to 5,000
1,000 to 2,500
Less than 1,000
Miles
0 50 100 150 200
GENERAL DRAFTING CO.,INC., N.Y.
GULF OF MEXICO
ATLANTIC OCEAN
Louisville
Nashville
Memphis
Birmingham
Atlanta
Richmond
Norfolk
Key West
90°
85°
80°
75°
40°
35°
30°
25°

Figure 323

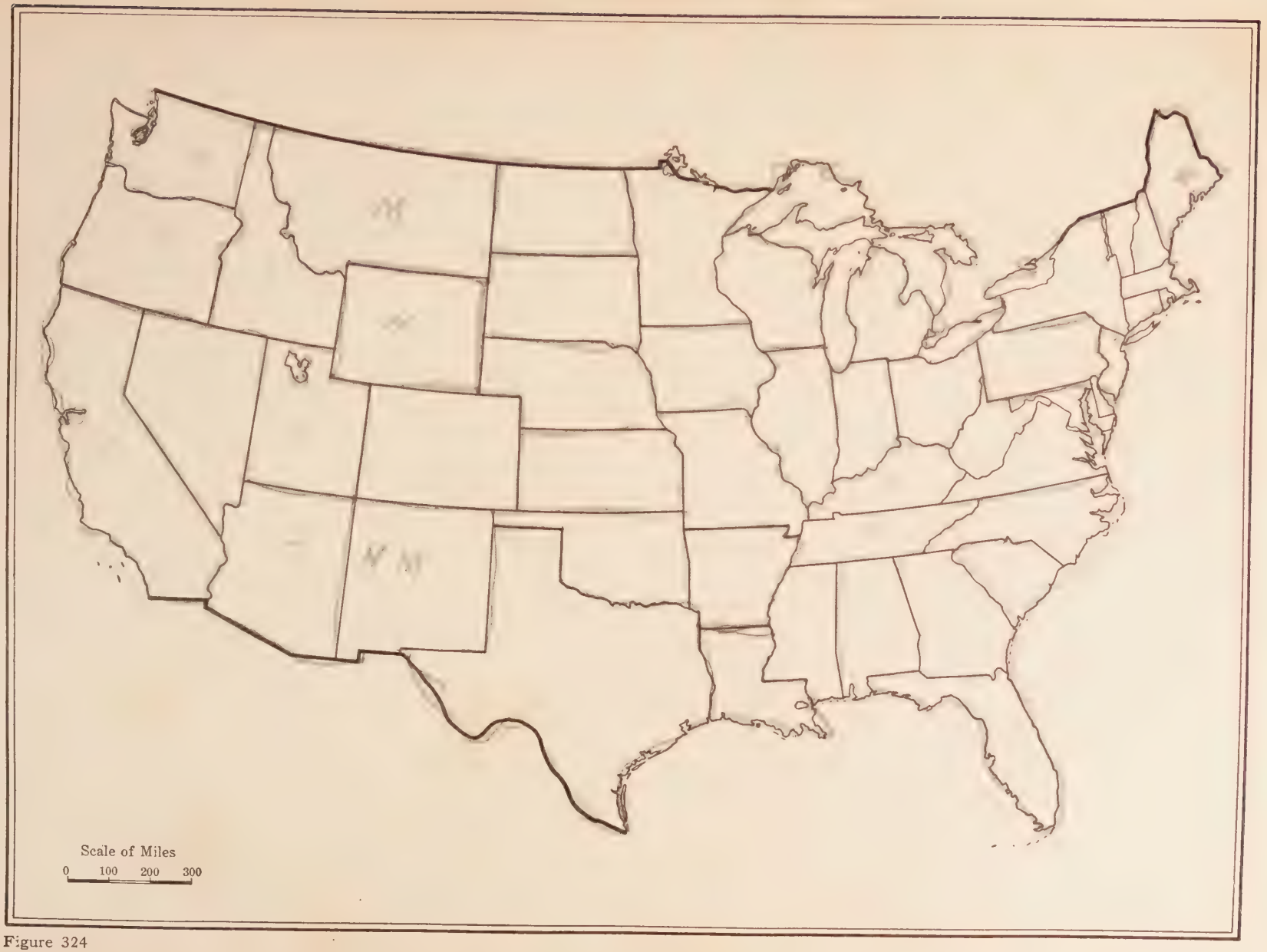


Figure 324

LIST OF ILLUSTRATIONS

FIGURE		PAGE
1.	Herding goats in New Mexico	*Facing* 1
2.	Wisconsin pastures	1
3.	A scene on the mountainous coast of Alaska	2
4.	A sandy desert in southwestern United States	3
5.	Among the mountains of Colorado	4
6.	A raisin vineyard in south-central California	4
7.	A map of the United States and the Atlantic World	5
8.	An airplane view of part of New York harbor	6
9.	An airplane view of Manhattan Island	7
10.	A map of New York City and vicinity	8
11.	West Street, New York City	10
12.	Weehawken Terminal	12
13.	An evening scene in New York City	14
14.	Skyscrapers in lower Manhattan	15
15.	A map of the United States and the Pacific World	16
16.	Relief map of North America	18
17.	Physical and political map of North America	19
18.	Among the mountains of North Carolina	20
19.	Looking down upon the highest part of the northern Appalachians	21
20.	On the boundary line between the United States and Mexico	22
21.	In southern Florida	23
22.	North of Hudson Bay	23
23.	Map of the United States	24–25
24.	Drawing of a section of a small city	27
25.	Drawing of a country section	27
26.	Part of the eastern edge of the Rocky Mountains	30
27.	Map of Western United States	31
28.	A forest scene in western Washington	32
29.	Map of forest and woodland in the United States	33
30.	Giant logs leaving the forest for the sawmill	33
31.	A sawmill near the Cascades	34
32.	Where ships and trains meet at a Seattle terminal	35
33.	Map showing precipitation in the United States	36
34.	Emptying a salmon trap, Puget Sound	37
35.	A fishing fleet	37
36.	A western mining town	38
37.	In a gold mine	39
38.	A copper plant in Arizona	39
39.	A scene in Leadville, Colorado, in the heart of the Rockies	40
40.	Dredging for gold in a California river	41
41.	A forest of oil derricks in southern California	41
42.	Map showing the important districts producing metal ores in the United States	42
43.	Map showing oil and gas fields in the United States	42
44.	At the eastern entrance to Rocky Mountain National Park, Colorado	42
45.	Looking across the Columbia River into Washington from the Columbia River Highway	43
46.	The Grand Canyon of the Colorado from the south rim; Grand Canyon National Park	44
47.	In Glacier National Park, Montana	45
48.	"Warriors of the timber line"	45
49.	Winter in Yosemite National Park, California	46
50.	An Indian village in New Mexico	47
51.	Crossing Great Salt Lake by rail	48
52.	A view in the Willamette Valley	49
53.	In the great wheat fields of eastern Washington	49
54.	Irrigated orchards in Washington, on the east side of the Cascade Mountains	50
55.	Farm lands near Sacramento, California	51
56.	Irrigated fruit lands in the Los Angeles district	52

FIGURE PAGE

57. A date garden near Phoenix, Arizona . 53
58. A fruit and vegetable farm near Sacramento 55
59. The great Arrowrock Dam, on the government reclamation project near Boise, Idaho 56
60. Map of irrigated lands in the United States 57
61. Irrigated lands at the foot of rain-catching mountains: looking east near Salt Lake City 57
62. A high pasture in the Colorado Rockies . 58
63. Map of National Forests and National Reclamation Projects 59
64. A railroad in the depths of a Rocky Mountain canyon 59
65. The famous Georgetown Loop, in the Rocky Mountains near Denver . . 60
66. Three powerful engines clearing deep snow from a railroad track in the Rocky Mountains 61
67. Snow sheds in a high mountain pass . 61
68. Part of the city of Tacoma 62
69. Looking across Portland toward the Cascade Mountains 63
70. Looking through Golden Gate toward the setting sun 64
71. Looking eastward from San Francisco across the bay 64
72. An airplane view of the harbor of Los Angeles 65
73. Main Street, Salt Lake City 66
74. Airplane view of railroad terminals, warehouses, and factories in Los Angeles . 67
75. Falls in Spokane, Washington . . . 67
76. A power plant in California 68
77. Logged-off land in western Washington . 69
78. Growing bush fruits on the land shown in Figure 77 69
79. Logging operations in the mountains of Washington 72
80. A population map of the United States . 73
81. Looking out upon the Colorado plains from the Rocky Mountains . . . 74
82. Map of the Western Interior 76
83. In the "cow country" 77
84. An irrigation canal in northwestern Texas 77
85. An alfalfa "ranch" on the high plains of Colorado 78

FIGURE PAGE

86. A beet sugar field in southeastern Montana 78
87. Kafir corn on the dry plains of northwestern Texas 78
88. Waiting to ship sugar beets at a town in southwestern Kansas 79
89. Plowing in the Texas Panhandle . . . 79
90. Looking toward the southern Rockies . 80
91. A ranch house in western Texas . . . 81
92. Map showing the distribution of sheep in the United States 82
93. Fighting frost in a Texas orchard . . 83
94. Cantaloupes grown under irrigation . 84
95. Map showing lengths of growing seasons in the United States 85
96. Map showing alfalfa acreage in the United States 85
97. Map showing acreage of sugar beets and sugar cane in the United States . . 85
98. A beet sugar factory in Nebraska . . 86
99. Loading sheep in western Kansas . . 87
100. Map showing acreage of corn in the United States 88
101. Map showing acreage of winter wheat in the United States 88
102. Map showing acreage of spring wheat in the United States 89
103. Map showing acreage of oats in the United States 89
104. Map showing acreage of hay and forage in the United States 89
105. Map showing the distribution of dairy cattle in the United States . . . 89
106. Map showing the distribution of beef cattle in the United States . . . 89
107. Map showing the distribution of swine in the United States 89
108. Map showing acreage of barley in the United States 90
109. Map showing acreage of rye in the United States 90
110. Map showing acreage of flax, rice, and tobacco in the United States . . 90
111. Map showing acreage of cotton in the United States 90
112. Stacking alfalfa in the Platte Valley, Nebraska 91
113. Beet sugar field, central Nebraska . . 92
114. Corn in shock in an Iowa field . . 93

FIGURE PAGE

115. Harvesting wheat in Iowa . . . 93
116. Cultivating corn in Kansas . . . 95
117. Cutting corn in northern Missouri . . 95
118. Plowing up a pasture in late summer . 96
119. Shredding corn for winter feeding . . 96
120. Map showing the distribution of cities in the United States 97
121. A small railroad town in the northern mixed-farming region 100
122. Cutting wheat in eastern North Dakota 100
123. Capping a shock of wheat . . . 100
124. A threshing scene in South Dakota . 101
125. An iron-ore pit in Minnesota . . . 103
126. An iron-ore dock at Duluth . . . 104
127. Cut-over land in the Minnesota National Forest, Minnesota 105
128. Map showing the forest regions of North America 106
129. A Minnesota logging camp . . . 107
130. Farm lands in the Mississippi Delta . 109
131. Harvesting sugar cane in Louisiana . 110
132. Harvesting rice near the coast of eastern Texas 111
133. Irrigating rice in southwestern Louisiana 111
134. Picking cotton on a plantation in eastern Arkansas 112
135. A cotton-ginning plant in Texas . . 113
136. A farm woodland in eastern Texas . . 115
137. A skidder at work near a logging camp in Louisiana 116
138. A cypress swamp at low water . . 116
139. In a Texas oil field 117
140. Part of a "tank farm" in Oklahoma . 118
141. A new oil town in Oklahoma as seen from the air 119
142. Denver, a city of the plains and mountains 121
143. An airplane view of part of Minneapolis 122
144. A bird's eye view of St. Paul from an island in the Mississippi 123
145. Map showing the principal uses of land in St. Louis and vicinity 124
146. Work at a St. Louis dock . . . 125
147. Part of St. Louis from the air . . 126
148. A portion of Omaha's sky line . . 127
149. An airplane view of part of Kansas City 127
150. Looking from river to lake across New Orleans 128
151. A portion of the Mississippi levee near New Orleans 128

FIGURE PAGE

152. Looking through the lock in the Inner Harbor Navigation Canal at New Orleans 128
153. An evening scene in Dallas . . . 129
154. The business section of San Antonio, as seen from the air 130
155. Airplane view of Galveston . . . 131
156. A busy day at a grain elevator in the central mixed-farming region . . . 132
157. Map of Southeastern United States . 134
158. A cotton-cloth mill and a cotton field in North Carolina 135
159. Map showing acreage of vegetables grown for sale in the United States . . 136
160. Map showing acreage of fruits and nuts grown for sale in the United States . 136
161. Carrying cotton from warehouse to dock at Memphis. 137
162. Wharf boats and steamers at Memphis . 138
163. Cotton mills on the Savannah River, at Augusta, Georgia 139
164. A Georgia peach orchard . . . 139
165. Portable sawmill at work in a Mississippi forest 139
166. Airplane view of a modern lumber plant in Mississippi 140
167. Swampy forest lands in South Carolina . 140
168. Gathering resin in Georgia . . 141
169. Collecting resin by the "cup and gutter" method 141
170. A turpentine still 141
171. Map showing producing-coal districts in the United States 142
172. Steel mills at Birmingham, Alabama . 142
173. Airplane view of Wilson Dam at Muscle Shoals, Alabama 143
174. Blue Grass farm lands 143
175. Harvesting an excellent crop of hemp in Kentucky 144
176. Tobacco tagged for sale in a Kentucky warehouse 145
177. A schoolhouse on posts in western Kentucky 146
178. A view of valley farms and timbered slopes 147
179. A stream-bed "road" in the highlands of eastern Kentucky 148
180. A farm in the southern highlands . . 149
181. In the heart of the southern Appalachians 150

FIGURE		PAGE
182.	A hillside corn field in eastern Kentucky	151
183.	A mountain cabin	151
184.	A power plant in Georgia	152
185.	Coal mines in West Virginia	153
186.	A view of Knoxville, Tennessee, from an airplane	154
187.	In the Everglades of Florida	155
188.	A drainage canal near the eastern edge of the Everglades	155
189.	Growing pineapples on reclaimed marsh lands in southeastern Florida	155
190.	A winter scene near Jacksonville, Florida; lettuce and lumber	156
191.	Growing cabbage in Florida for early northern markets	156
192.	An orange orchard near Tampa, Florida	157
193.	Mining phosphate rock in Florida	157
194.	Moss-hung pine trees	158
195.	A famous Florida hotel for tourists	158
196.	Picking lettuce near Charleston, South Carolina	159
197.	A field of early potatoes in South Carolina	159
198.	Strawberries in South Carolina	159
199.	Harvesting peanuts	161
200.	A Virginia field of sweet potatoes	162
201.	In the North Carolina piedmont	162
202.	Government canal at Louisville, Kentucky	163
203.	Airplane view of part of Louisville	163
204.	The port of Mobile, Alabama, as seen from the air	166
205.	Machinery for handling coal at Charleston, South Carolina	167
206.	Looking down on the water front of Newport News, Virginia	168
207.	Map of Northeastern United States	170–171
208.	Cultivating a cornfield in Illinois	172
209.	A logging camp in northern Michigan	173
210.	A scene in "Cloverland," northern Michigan	173
211.	On the coast of Maine	174
212.	In the White Mountains	174
213.	Map showing production of crops cut for silage in the United States	175
214.	Map showing the production of butter made in factories in the United States	176
215.	Map showing the production of cheese made in factories in the United States	176
216.	Growing tobacco in the Connecticut Valley	176
217.	Map showing acreage of potatoes in the United States	176
218.	Map showing acreage of bush fruits and cranberries in the United States	177
219.	Looking up the Connecticut Valley; New Hampshire on the right, Vermont on the left	178
220.	Maple sugar time in Vermont	179
221.	A summer view along a Maine river	180
222.	In a Vermont quarry	181
223.	Mills by the Merrimac in Lawrence, Massachusetts	182
224.	Shipyards at Quincy, Massachusetts	183
225.	In Gloucester, Massachusetts	183
226.	The heart of Boston from an airplane	184
227.	Maps of some of the larger cities of the United States	186
228.	Bridgeport, Connecticut, as seen from the air	189
229.	In the highlands of western Massachusetts	190
230.	Delaware Water Gap	190
231.	In the lower Mohawk Valley	191
232.	A dairy farm in New York	192
233.	A harvest scene in southern New York	192
234.	A coal breaker and culm pile at Scranton, Pennsylvania	193
235.	Part of the inner harbor of Buffalo	194
236.	The water front of Buffalo	194
237.	The Soo canals as seen from the air	196
238.	"Bucking" the ice in St. Mary's River	197
239.	An airplane view of Niagara Falls	198
240.	Buffalo as seen from a height of 2000 feet	199
241.	Unloading iron ore at Toledo, Ohio	200
242.	Busy wharves at Cleveland	201
243.	The heart of Cleveland as photographed from an airplane	202
244.	The skyline of Detroit, as seen from an airplane above the river	203
245.	A field of celery in southern Michigan	204
246.	A scene in Grand Rapids, Michigan	205
247.	Plowing new land in northern Wisconsin	206
248.	A farm landscape in Wisconsin	207
249.	Winter work on a Wisconsin farm	207
250.	Part of the harbor of Milwaukee, as photographed from an airplane	208
251.	Looking down from an airplane upon the business center of Chicago	210

FIGURE PAGE

252. The Union Stockyards at Chicago as they appear from an airplane . . 212
253. A great plant at Chicago in which agricultural implements are made . . 213
254. A threshing scene in Indiana . . . 214
255. Steel mills at Gary, Indiana . . . 215
256. The heart of Indianapolis as seen from the air 216
257. Looking across Cincinnati from an airplane 217
258. A factory at Dayton, Ohio, photographed from an airplane 219
259. Some of the great rubber plants at Akron, Ohio, photographed from an airplane 220
260. An airplane view of part of Pittsburgh . 221
261. In a manufacturing district of Pittsburgh 222
262. Pittsburgh steel mills at night . . 222
263. Coke ovens in the Connellsville district, Pennsylvania 223
264. A coal mine in western Pennsylvania . 224
265. The Capitol of the United States and part of Washington, photographed from an army airplane . . . 226
266. Part of the city of Baltimore as it appeared from an airplane flying at a height of 18,000 feet 227
267. Lumber piers at Baltimore . . . 228
268. A farm scene in Maryland . . . 229
269. A tomato-canning factory in Maryland . 230
270. A shipping point for tomatoes in southwestern New Jersey 230
271. Unloading green peas at a canning factory in Delaware 230
272. The beach at Atlantic City . . . 231
273. Central Philadelphia from the air . . 232
274. An airplane view of part of the Philadelphia water front 233
275. A huge manufacturing plant on the Delaware River near Philadelphia . 234
276. Steel mills at Bethlehem, Pennsylvania . 235
277. Map of the railroads of the United States. 243
278. A bird's-eye view of Seward . . . 244
279. Map of Alaska 245
280. An Alaskan salmon cannery . . . 246
281. Coal seams in interior Alaska . . . 246
282. Farm lands in Alaska 247
283. Mining gold near Nome 248

FIGURE PAGE

284. A reindeer herd in western Alaska . . 248
285. A map of some scattered American lands 250
286. Farm lands in the Hawaiian Islands . 251
287. A pineapple plantation in the Hawaiian Islands 251
288. A sugar-cane field near Honolulu . . 251
289. A river scene in the Philippines . . 252
290. Abaca plants 253
291. Drying Manila hemp fibers . . . 253
292. In the business section of Manila . . 253
293. A quaint street scene in Manila . . 253
294. A Philippine village 254
295. Passing through the Panama Canal . 254
296. Part of San Juan harbor . . . 255
297. A modern sugar mill in Porto Rico . 255
298. An excellent Porto Rican road, bordered by hillside farms 256
299. Growing tobacco under cover . . . 256
300. A Porto Rican home 256
301. An inviting tropical coast . . . 257
302. Part of Montreal 258
303. Map of Canada 259
304. An Eskimo summer camp in northern Canada 260
305. Winter houses in Arctic Canada . . 260
306. Furs from Canada's Northland . . 261
307. Logging in British Columbia . . . 262
308. Among the mountains of British Columbia 262
309. A scene in Vancouver 263
310. Wheat lands in Manitoba . . . 264
311. Grazing lands in Alberta . . . 264
312. A farm town in Saskatchewan . . 265
313. An Alberta coal mine 265
314. Ft. William, Ontario 266
315. A farm scene in Ontario 266
316. Farms along the lower St. Lawrence . 267
317. Valley farms in the highlands of eastern Canada 268
318. Digging potatoes in Nova Scotia . . 269
319. At a fishing village on the Atlantic Coast 269
320. Reference map of Western United States 272
321. Reference map of Western Interior . 273
322. Reference map of Northeastern United States 274–275
323. Reference map of Southeastern United States 276
324. Outline map for tracing purposes . . 277

BOOKS SUGGESTED FOR EXTRA READING

In parts, at least, of each of the following books you will find interesting facts about the ways in which people work, play, and live in the United States and Canada. After you discover such facts, find all that you can, both in these books and in this geography, to help you explain them.

Aitchison, Alison E., and Uttley, Marguerite: *Across Seven Seas to Seven Continents.* (The Bobbs-Merrill Company.)

Allen, Nellie B.: *Industrial Studies: United States.* (Ginn and Company.)

Allen, Nellie B.: *Industrial Studies: North America.* (Ginn and Company.)

Bealby, G. T.: *Canada.* (Adam and Charles Black.)

Collins, Francis A.: *Our Harbors and Inland Waterways.* (The Century Company.)

Curtis, Alice Turner: *The Story of Cotton.* (The Penn Publishing Company.)

Crump, Irving: *The Boys' Book of Forest Rangers.* (Dodd, Mead, and Company.)

Dorrance, John Gordon: *The Story of the Forest.* (American Book Company.)

Fabre, Jean Henry: *The Secret of Everyday Things.* (The Century Company.)

Fairbanks, Harold W.: *Conservation Reader.* (World Book Company.)

Fairford, Ford: *Newfoundland.* (Adam and Charles Black.)

Fairgrieve, James, and Young, Ernest: *United States.* (D. Appleton and Company.)

Fairgrieve, James, and Young, Ernest: *The World.* (D. Appleton and Company.)

Fairgrieve, James, and Young, Ernest: *In the New World.* (George Philip and Son, Ltd.)

Fisher, Elizabeth F.: *Resources and Industries of the United States.* (Ginn and Company.)

George, Marian M.: *Little Journeys to Alaska and Canada.* (A. Flanagan Company.)

George, Marian M.: *Little Journeys to Hawaii and the Philippines.* (A. Flanagan Company.)

Gilman, Isabel Ambler: *Alaska, the American Northland.* (World Book Company.)

Hall, Alfred Bates, and Chester, Clarence L.: *Panama and the Canal.* (Newson and Company.)

Henderson, Rose: *Little Journeys in America.* (The Southern Publishing Company.)

Island Stories, Retold from St. Nicholas. (The Century Company.)

Koch, Felix J.: *Little Journeys through the Great Southwest.* (A. Flanagan Company.)

Koch, Felix J.: *Little Journeys to Our Western Wonderland.* (A. Flanagan Company.)

Koch, Felix J.: *A Little Journey to Northern Wilds.* (A. Flanagan Company.)

Marsh, Lewis: *The Americas.* (Blackie and Son, Ltd.)

McMurry, Charles A.: *Larger Types of American Geography.* (The Macmillan Company.)

Monroe, Will Seymour, and Buckbee, Anna: *Our Country and Its People.* (Harper and Brothers.)

Murphy, Emily F.: *Our Little Canadian Cousin of the Great Northwest.* (L. C. Page and Company.)

Nida, William Lewis: *Elementary Agriculture.* (A. Flanagan Company.)

Nida, Stella Humphrey: *Panama and Its Bridge of Water.* (Rand McNally and Company.)

Nixon-Roulet, Mary F.: *Our Little Alaskan Cousin.* (The Page Company.)

Pack, Arthur Newton: *Our Vanishing Forests.* (The Macmillan Company.)

Pike, Harry Lee Mitchell: *Our Little Panama Cousins.* (L. C. Page and Company.)

Price, Overton W.: *The Land We Live In.* (Small, Maynard, and Company.)

Rocheleau, W. F.: *Great American Industries.* (A. Flanagan Company.)

Roosevelt, Theodore: *Stories of the Great West.* (The Century Company.)

Stefansson, Vilhjalmur, and Irwin, Violet: *Kak, the Copper Eskimo.* (The Macmillan Company.)

Tappan, Eva March: *Diggers in the Earth.* (Houghton, Mifflin and Company.)

Tappan, Eva March: *The Farmer and his Friends.* (Houghton, Mifflin and Company.)

Tappan, Eva March: *Travelers and Traveling.* (Houghton, Mifflin and Company.)

Tomlinson, Everett T.: *Places Young Americans Want to Know.* (D. Appleton and Company.)

Wade, Mary Hazleton: *Little Folks of North America.* (W. A. Wilde Company.)

Wade, Mary Hazleton: *New Little Americans.* (W. A. Wilde Company.)

Wade, Mary Hazleton: *Our Little Porto Rican Cousin.* (L. C. Page and Company.)

Wallace, Dillon: *The Story of Grenfell of Labrador.* (Fleming H. Revell Company.)

Werthner, William B.: *How Man Makes Markets.* (The Macmillan Company.)

Yard, Robert Sterling: *The Top of the Continent.* (Charles Scribner's Sons.)

Note: In *St. Nicholas*, *Compton's Pictured Encyclopedia*, and the *Book of Knowledge*, you can find stories and other articles which contain valuable and interesting material relating to the geography of the United States and Canada.

INDEX

Helps in pronouncing words. — There are marks over some of the letters in various words in the index which will help you to pronounce those words correctly. If you do not know the meaning of these marks, you may refer as often as necessary to the following paragraph, in which words you already know how to pronounce are marked.

Pronounce ā as in dāy; ă as in măn; ä as in färm; â as in wâres; å as in tåsk; ạ as in wạrm; ą as in metą̄l; ē as in ēquator; ĕ as in dĕlta; ē as in hērd; ę as in evęn; ĕ as in ĕvent; ī as in nīght; ĭ as in lĭve; ō as in glōbe; ŏ as in hŏt; ô as in nôrth; ô as in ôbey; ū as in fūel; ŭ as in sŭn; ụ as in rụle; û as in ûnite; ў as in citў.

A-bä-cä′, 252
Ăk′ron, 218, 219
Ăl′å-bä′må, 137, 141, 142, 239, 241, 242
Å-lăs′kå, 17, 245–248
  Map of, 245
Ăl-bēr′tå, 264, 265
Alfalfa, 52, 54, 55, 83–84, 91, 94, 98, 147
  Map of acreage, 85
Allegheny Plateau (ăl′ē-gā′nĭ), 218, 224
Allegheny River, 220
Ăl-tōō′nå, 224–225
Ăp′på-lā′chĭ-ăn Mountains, 21, 146, 149, 174
Appalachian Valley, 146–148, 225
Apples, 51–52, 150, 162, 175, 193, 230, 263, 267, 268
Ā′prĭ-cŏts, 53
Ăr′ĭ-zō′nå, 38, 45, 47, 54, 57, 239, 241
Arkansas (ăr′kăn-sạ), 113, 114, 115, 116, 117, 239, 241, 242
Asbestos, 267
Asparagus, 54, 159, 193
Ăt-lăn′tå, 164–165
Ăt-lăn′tĭc City, 231
Atlantic Ocean, 2, 6, 17
  A trip across, 3–6
Automobiles, 62, 202, 208, 211
  Manufacture of, at Detroit, 203–204

Bāk′er Island, 257
Bą̄l′tĭ-mōre, 227–229, 239
Bananas, 11, 129, 249
Barley, 54, 102, 206, 265
  Map of acreage, 90
Bayonne (bā-yōn′), 236
Beans, 54, 113, 156, 159, 230
Beef cattle, 57, 77, 79–82, 87, 90, 97, 98, 139, 148, 151, 157, 241
  Map of distribution, 89
Bĕth′lē-hĕm, 234
Birmingham (bir′ming-ăm), 142, 164
Black Hills, 77
Blizzards, 81
Blue Ridge, 146, 147, 162
Boise (boi′zā), 56
Boll weevil, 115, 138, 168
Boots and shoes, 124, 180, 182, 209, 218, 234
Bos′ton, 182, 184–187, 239
Brĭdge′port, Conn., 187, 189
Brit′ish Cô-lŭm′bĭ-å, 262–263
Brockton, 188
Brook′lўn, 9, 12
Bŭf′få-lō, 195, 197, 198, 199, 239
Building stone, 179, 216, 219
Būtte, 38
Butter, 51, 102, 175, 206
  Map showing production of, in factories, 176

Cabbage, 156, 158–160, 230
Căl-ĭ-fôr′nĭ-a, 34, 36, 37, 41, 47, 48, 49, 52–55, 63–66, 68, 84, 106, 239, 241, 242
Căm′den, N. J., 234
Căn′å-då, 258–271
  And the United States, 271
  Map of, 259
Canals
  At Chicago, 211, 212
  Erie, 195
  At New Orleans, 130
  Panama, 17, 254
  Soo, 195–196, 197, 266
  Welland, 198, 266
Canal zone, 254
Cantaloupes, 55, 83, 230
Canyon, 45–46
Cape Cŏd, 177–178
Capitals, 68–69, 123, 132, 164, 165, 189, 215, 219
Carabao, 253
Căs-cāde′ Range, 48, 51, 55, 62
Cattle (*See beef cattle and dairy cattle.*)
Celery, 156, 204
Central mixed-farming region, 92–99, 142–146, 172, 200–204, 206–220
Charles′ton, S. C., 159, 166, 167
Chăt′tå-nōō′gå, 153
Cheese, 151, 175, 206
  Map showing production of, in factories, 176
Cherries, 51, 53
Chĕs′a-peake Bay, 165, 229
Chicago (shĭ-cą̄′gō), 209–214, 239
Chinook (shĭ-nōōk′), 80
Chrĭst′mas Island, 257
Cincinnati (sĭn-sĭ-nă′tĭ), 217–218, 239
Cities (*See also larger cities, by name.*)
  Manufactures common to, 120–121
  Map of distribution, 97
  Map of larger American, 186
  Map of New York and neighboring cities, 8
  Population of larger, 239
Clēve′lănd, 201–202, 239
Clothing, 14, 120, 124, 187, 200, 202, 218
Clover, 92, 147
Coal, 122, 123, 141, 146, 165, 166, 167, 182, 188, 195, 200, 201, 202, 203, 207, 218, 220, 222, 228, 234, 237, 242, 246, 267, 270
  Map of producing areas, 142
  Mining of, 152–153, 193–194, 222, 224, 263, 265, 269
Coastal mixed-farming region, 109–113
Coconuts, 252
Coffee, 14, 129, 187, 256
Coke, 142, 222
Cŏl-ô-rä′dō, 39, 75, 83, 84, 121, 239, 241
Cô-lŭm′bĭ-å River, 35, 37, 43, 63
Cô-lŭm′bŭs, O., 218, 219
Connecticut (kŏ-nĕt′ĭ-kŭt), 175, 180, 187, 188, 189, 239, 241
Cŏn′nells-vîlle, Pa., 222
Copper, 38, 39, 41, 197, 242, 246, 262, 263
Copra, 252
Corn, 92, 93, 94, 95, 97, 98, 99, 102, 113, 114, 115, 132, 139, 143, 147, 149, 156, 175, 206, 214, 240, 241
  Map of acreage, 88
  Sweet, 54, 193, 230
Cotton, 113–115, 136–138, 148, 154, 159, 240, 241
  Manufacture of, 138, 165, 169, 180, 182
  Map of acreage, 90
  Products of, 114, 120, 163
Cow peas, 113
Cranberries, 177–178, 230
  Map of acreage, 177
Cucumbers, 156, 159
Cŭm′bēr-lănd Plateau, 146, 152

Dairy cattle, 51, 54, 84, 102, 175, 241
  Map of distribution, 89
Dairy farming, 98, 102, 109, 151, 175, 192, 206, 231, 268
Dăl′lăs, 130
Dates, 54–55
Dā′ton, 218, 219
Dĕl′å-wâre, 29, 229, 230, 231, 239, 241
Delaware Water Gap, 191
Dĕl-mär′vĭ-a, 136, 161
Delmarvia mixed-farming region, 160–162, 229–231
Delta of Mississippi, 109, 127
Dĕn′ver, 120, 121, 239
Deserts, 2, 46, 47, 53, 57, 61, 70, 238
Des Moines (dē moin′), 123
Dē-troit′, 203–204, 239
Drained lands, 154
Dry farming, 86
Dû-luth′, 102, 103, 107, 197
Dunes, 79, 161, 177
Durum wheat, 86

East Orange, 236
East River, 9, 11
Ē-lĭz′å-bĕth, N. J., 235
Eskimos, 248, 260

Exercises, 16–17, 28–29
On Canada, 258–259, 263, 270–271
On Northeast, 172–173, 188–190, 191–193, 199, 202, 209–210, 215, 223–224, 237
On Scattered American Lands, 244, 249, 254, 257
On Southeast, 135–136, 167–169
Summary, on United States, 239–243
On West, 30–31, 35–36, 37–38, 41–42, 43, 48–49, 58–59, 67–68, 69, 71–72
On Western Interior, 75, 87–91, 98–99, 108, 119–120, 132–133

Factories, 14, 50, 62, 63, 66, 121–122, 124, 126, 129, 142, 164, 165, 167, 180, 181, 182, 183, 187, 188, 189, 194, 199, 200, 201, 204, 205, 207, 210, 213, 215, 218, 219, 222, 223, 224, 228, 230, 233, 234, 236
Fair banks, 246, 247, 248
Fall River, Mass., 187
Farm machinery, 51, 85, 94, 95, 99, 100, 111, 144, 145, 161, 214
Manufacture of, 213
Farming (*See also dairy farming, fruit farming, mixed farming, stock farming, and truck farming.*)
In Alaska, 246, 247
In Canada, 261, 262, 264, 267
In Hawaiian Islands, 249
In Northeast, 174–178, 192–193, 200, 204, 206–207, 214, 218, 224, 225, 229–231, 236
In Philippine Islands, 252
In Porto Rico, 254–257
In Southeast, 136–137, 138–139, 142–145, 147–151, 154–157, 158–162
In West, 48–57
In Western Interior, 83–86, 92–96, 98, 99–102, 109–115
Fertilizers, 114, 142, 157, 164, 165, 166, 228, 229
Fishing
In Alaska, 245
In Canada, 262, 269
In Chesapeake Bay, 229
In New England, 182–183
In western waters, 35–37
Flax, 102, 265
Map of acreage, 90
Flŏr'ĭ-dȧ, 29, 154–158, 239, 241, 242
Flour, manufacture of, 66, 121–122, 125, 164, 199, 200
Forest regions, map of, 106
Forests
Of Alaska, 245
Of Appalachians, 151
Of Canada, 260, 262, 264, 269
Maps of, 33, 59
Of Michigan, 205
Of Minnesota, 105–108
National and state, 70–71, 108, 152, 179, 224
Of New England, 179
Of Pennsylvania, 224, 225
Of Philippines, 253
Of South, 115–117, 139–141, 157, 163, 164
Of West, 30–35
Fort William, 259, 266
Fort Worth, 130
Fresno (frĕz'nō), 53
Frosts, 53, 83, 101, 110, 160, 177, 193
Fruit farming, 50, 51–52, 53–55, 83, 109, 139, 156, 162, 175, 176–177, 192–193, 204, 206–207, 229, 230, 249, 263, 267, 268
Furniture, 205, 213
Fur trading, 248, 260

Găl'vĕs-ton, 131–132
Games and puzzles
An alphabet game, 243
An automobile journey puzzle, 169
Building pyramids, 134
"A comparison puzzle," 271
"An exchange race," 72–73
An "F" puzzle, 169
"A farm puzzle," 132
"Initials," 72
"A journey puzzle," 3, 238
"Jumble square," 134
Playing with maps, 243
"Suggest game," 88
"Ten questions," 133–134
"Western" puzzles, 73
Word puzzles, 169, 270–271
Gā'ry, 215
Geor'gĭ-a, 138, 139, 239, 240, 241, 242
Gloucester, Mass. (glŏs'tēr), 182, 183, 184
Goats, 58, 82
Gold, 40, 41, 242, 246, 247, 248, 261
Golden Gate, 63
Grand Canyon, 45–46, 61
Grand Răp'ids, 205
Grapefruit, 55
Grapes, 52–53, 193
Graphs, directions for making, 99, 120, 132–133, 168, 169, 240, 242, 263, 271
Grasshoppers, 94
Grazing
In Canada, 265
In the "cow country," 75–83
In West, 57–58
Grazing and forage-crop region, 75–88
Great Basin, 48
Great Lakes
Open season on, 108, 196
Traffic on, 102, 195, 197, 201, 202, 204, 207–208, 210, 222–223
Great Plains, 77
Great Salt Lake, 41, 48
Green Mountains, 174
Growing seasons, 98, 101, 110, 114, 148, 175, 177
Map of, 85
Guam (gwäm), 257

Hăl'ĭ-făx, 268–269
Harbors
Of Atlantic Coast, 7–9, 10–11, 165, 187, 227–228, 232, 235, 237
Of Great Lakes, 102–103, 195, 196, 201, 207, 210
Of Gulf Coast, 129, 131, 167
Of Pacific Coast, 62, 63, 65, 66
Här'lĕm River, 11
Hăr'rĭs-burg, 225
Harvesting
Of corn, 93–94
Of cotton, 113
Of fruit, 50, 53, 176, 230
Of peanuts, 160
Of rice, 111
Of sugar beets, 84
Of sugar cane, 109–110
Of wheat, 51, 94, 98, 99
Haverhill (hā'vēr-ĭl), 188
Hawaiian Islands (hä-wī'yăn), 17, 249, 251
Hay, 84, 93, 102, 175, 240, 241, 267
Map of acreage, 89
(*See alfalfa.*)
Hemp, 142, 145
Hessian flies, 102
Highland mixed-farming region, 146–154, 174–175, 176, 179, 192, 224–225
Hō'bō-kĕn, 235, 236
Home geography, 23–28, 238–239
Homes, 15, 86, 92, 123, 124, 126, 129, 137, 144, 146, 151, 161, 163, 165, 174–175, 199, 218, 219, 221, 224, 225, 228, 232, 253, 257, 260
Ho-no-lụ'lụ, 251
Horses, 51, 77, 111, 241
Houston (hūs tŭn), 130
How'land Island, 257
Hŭd'son River, 7, 9, 10, 11, 12, 191–192

Ice sheets, results of work of, 174, 261
Ĭ'dȧ-hō, 51, 84, 239, 241, 242
Illinois (ĭl'ĭ-noi'), 209–214, 239, 240, 241
Ĭm-pē rĭ-ăl Valley, 54–55
Ĭn'dĭ-an'ȧ, 214–217, 239, 240, 241
Ĭn'dĭ-ăn-ăp'ô-lĭs, 215–217, 239
Ĭ'ô-wȧ, 95, 96, 123, 239, 240, 241, 242
Iron and steel, 141, 164, 199, 201, 211, 215, 219, 222–223, 224, 228, 234, 267, 269
Iron ore, 42, 97, 103, 141, 195, 196, 197, 201, 202, 211, 220, 222–223, 224, 229, 242, 262, 269
Irrigation, 49, 51, 53, 56, 83, 84, 91, 111–112

Jăck'son-vĭlle, Fla., 166, 167
James River, 162, 165
Jär'vĭs Island, 257
Jer'sey City, 235, 236, 239
Jewelry, 42, 180, 236
John'son Island, 257
Johns'town, 224
Juneau (jụ'nō), 246

Kafir corn, 86, 115
Kansas (kăn'zas), 84, 92, 94, 95, 117, 125, 239, 240, 241
Kansas City, 125–126, 239
Kĕn-tŭck'ỹ, 142–145, 146, 153, 162–163, 239, 241
Key West, 158
Knoxville (nŏx'vĭl), 153

Law'rĕnce, 182
Lead and zinc, 39, 97, 242, 263
Leadville (lĕd'vĭl), 39
Leather, 180, 187, 208, 231, 234, 236
Lettuce, 54, 156, 159
Limestone, 141, 223, 242
Loganberries, 50
Logging
Camps, 105–106, 117
In Alaska, 245
In Appalachian Mountains, 152
In Canada, 261, 262, 269

Logging (*continued*)
In Michigan, 205–206
In Minnesota, 106–107
In New England, 179
In South, 115–117, 139–140, 157
In West, 34
Lōs Ăn′gĕlĕs, 65, 66, 68, 239
Louisiana (lụ-ē′zē-ăn′ȧ), 114, 115, 117, 126 130, 140, 239, 241, 242
Louisville (lụ′ĭ-vĭl), 162–163
Lōw′ĕll, 182
Lumber, 34, 65, 102, 139–140, 152, 163, 166, 195, 197, 207, 211, 213, 228
Lumbering (*See logging.*)
Lynn, 188

Maine, 173, 176, 179, 188, 239, 241, 242
Măm′moth Cave, 145
Măn′chĕs-tĕr, 182
Măn-hăt′tăn, 9
Mȧ-nĭl′ȧ, 253
Măn-ĭ-tō′bȧ, 264, 265
Mä-nụ′ä, 257
Manufacturing (*See cities, by name, for their manufactures.*)
In Hawaiian Islands, 251
In large cities, 120
In New England, 180–184, 188–189
In Ontario, 266–267
In Philippine Islands, 253
In various states, 241
Maple sugar, 179
Maps
Acreage of
Alfalfa, 85
Barley, 90
Bush fruits and cranberries, 177
Corn, 88
Cotton, 90
Flax, tobacco, and rice, 90
Fruits and nuts, 136
Hay and forage, 89
Oats, 89
Potatoes, 176
Rye, 90
Spring wheat, 89
Sugar beets and sugar cane, 85
Vegetables, 136
Winter wheat, 88
Alaska, 245
Canada, 259
Coal-producing districts, 142
Crops for silage, 175
Distribution of
Beef cattle, 89
Cities, 97
Dairy cattle, 89
Population, 73
Sheep, 82
Swine, 89
Forest and woodland, 33
Forest regions, 106
Growing seasons, lengths of, 85
Irrigated lands, 57
National forests and national reclamation projects, 59
New York City and vicinity, 8
North America
Physical and political, 19
Relief, 18
Northeastern United States, 170–171
Oil and gas, 42
Ore deposits, 42
Outline map, 277
Precipitation, 36
Production of
Butter, 176
Cheese, 176
Railroads in United States, 243
Reference maps, 272–276
Scattered American lands, 250
Some American cities, 186
Southeastern United States, 134
United States, 24–25
United States and Atlantic World, 5
United States and Pacific World, 16
Uses of land in St. Louis, 124
Western Interior, 76
Western United States, 31
Maritime and manufacturing region, 176, 180–189, 235–237
Maryland (mĕr′ĭ-lănd), 227–230, 239, 241
Măs′sȧ-chụ′sĕtts, 175, 176–177, 181–187, 188, 189, 239, 241
Meat-packing, 14, 67–68, 121, 125, 126, 130, 199, 202, 212–213, 217, 218, 236
Memphis (mĕm′fĭs), 137–138, 163–164
Mĕr′rĭ-măc River, 181–182
Michigan (mĭsh′ĭ-găn), 203–206, 239, 241, 242
Midway Islands, 257
Mills (*See factories.*)
Mĭl-wau′kee, 207–209, 239
Mining
In Alaska, 246, 247, 248
Of asbestos, 267
In Canada, 261–262, 263, 265, 267, 269
Of coal, 123, 141, 152–153, 193–194, 201, 202, 222, 224, 242, 247, 263, 265, 269
Of copper, 38, 39, 197, 242, 246, 263
Of gold, 39, 40, 242, 246, 247, 248, 261, 263
Of iron ore, 97, 103, 141, 164, 202, 242, 269
Of lead and zinc, 39, 97, 242, 263
Of nickel, 261
In Northeast, 193–194, 197, 201, 202, 222, 224
Of oil, 41, 117, 153, 242
Of phosphate rock, 157, 164
Of silver, 242, 261, 263
In Southeast, 141, 152, 157
In various states, 241–242
In West, 37–42
In Western Interior, 103–104, 117
Mining and lumbering region, 102–108, 173
Mĭn-nĕ-ăp′ō-lĭs, 121–123, 239
Mĭn-nĕ-sō′tȧ, 99, 101, 102–108, 239, 240, 241, 242
Mĭs-sĭs-sĭp′pĭ, 139–140, 239, 240, 241, 242
Mississippi River, 121, 123, 127, 137–138, 163
Missouri (mĭ-sụ′rĭ), 95, 96–97, 123–125, 239, 240, 241, 242
Mixed farming, 91, 92–94, 102, 112–113, 115, 138, 142–143, 153–154, 160
Mobile (mō-bēl′), 166, 167
Mō′hawk Valley, 191–192
Mō-nŏn′gȧ-hē′lȧ River, 220, 222
Mŏn-tā′nȧ, 38, 51, 82, 83, 84, 239, 241
Mŏnt-rē-ȯl′, 259, 266, 270
Mountains
And forests, 70–71, 151–152
And railroads, 60, 191
And rainfall, 55–56
Scenery in, 43, 152, 174, 263
Mules, 109, 111, 145, 165, 241
Muscle Shoals (mŭs′ĕl), 142

Năsh′vĭlle, 164
National forests, 70–71, 108, 152, 179, 224
Nĕ-brăs′kȧ, 81, 84, 85, 91, 125, 239, 240, 241
Nĕ-vä′dȧ, 57, 239, 241, 242
New′ark, N. J., 235, 236, 239
New Bĕd′ford, Mass., 187
New Brŭns′wick, 268, 269
New England, 173–190
Newfoundland (nū′fŭnd-lănd′), 182, 183
New Hămp′shĭre, 174, 181, 182, 239, 241
New Hā′ven, Conn., 187
New Jer′sey, 235–236, 239, 241
New Mĕx′ĭ-cō, 47, 83, 239, 241, 242
New Ôr′lē-ănz, 120, 126–130, 136, 239
New′port News, 166, 167
New Yôrk, 192–193, 195, 197–200, 239, 240, 241, 242
New York City, 7–17, 237, 239
Map of, 8
Nī-ăg′ȧ-rȧ Falls, 197–198, 267
Nickel, 261
Nitrates, 142
Nōme, 248
Nôr′folk, Va., 166
North America, maps of, 18, 19
North Căr-ô-lī′nȧ, 138, 159, 160, 162, 165, 239, 241, 242
North Dȧ-kō′tȧ, 99, 101, 239, 240, 241
Northeastern United States, 172–237, 240
Map of, 170–171
Northern mixed-farming region, 99–102
Notebook in geography, 13, 29, 37, 43, 48, 58, 69, 88, 99, 108, 120, 168–169, 190, 240–242, 270, 271
Nō′vȧ Scotia (skō′shyȧ), 268, 269

Oak′land, 63
Oats, 50, 92, 93, 94, 102, 113, 150, 175, 206, 240, 265, 267
Map of acreage, 89
Ō-hī′ō, 200–203, 217–220, 239, 240, 241
Ohio River, 163, 217–218, 220, 222
Oil pipe lines, 117–118, 215, 223, 233
Ō′klȧ-hō′mȧ, 92, 114, 117, 119, 239, 240, 241
Ō′mȧ-hȧ, 120, 125–126
Ŏn-tā′rĭ-ō, 267–268
Oranges, 53, 54, 156
Ŏr′ĕ-gŏn, 34, 35, 36, 37, 50, 51, 63, 67, 84, 106, 115, 239, 241, 242
Oyster fisheries, 229
Ō′zärk Plateau, 96–97

Pȧ-cĭf′ĭc Ocean, 17, 249, 257
Passaic (pă-sā′ĭk), 236

Păt'ĕr-son, N. J., 235, 236
Peaches, 53, 139, 148, 230
Peanuts, 113, 139, 160–161
Pears, 51, 53, 230
Peas, 159, 193, 230
Pĕnn'sylv-vā'nĭ-à, 193–194, 220–225, 231–235, 239, 241, 242
Petroleum, 41, 65, 117–119, 130, 132, 153, 166, 185, 215, 233–234, 236, 242
Philadelphia (fĭl'à-dĕl'fĭ-à), 231–234, 239
Philippine Islands (fĭl'ĭ-pīn), 17, 252–254
Phoenix (fē'nĭks), 38
Phosphate rock, 157, 164
Pictures
  Collections of, 88, 132
  Exchanging, 28
  Moving, 47–48
  Taking, near home, 26
Piedmont Plateau (pēd'-mŏnt), 162, 165, 225
Pineapples, 154, 249
Pĭtts burgh, 201, 220–223, 239
Playgrounds
  Atlantic City, 231
  Of Florida, 157
  Of New England, 173–174
  Of the West, 43–48
Port Är'thŭr, 259, 266
Portland cement, 215
Port land, Me., 187–188, 268–269
Portland, Ore., 63, 66, 68, 239
Pōr'tō Rico (rē'kō), 254–257
Ports mouth, Va., 159
Potatoes, 50, 92, 113, 139, 155–156, 159, 161, 177, 230, 241, 267
  Map of acreage, 176
Pottery, 235
Poultry, 94, 148–149, 177
Prairie dogs, 82
Precipitation (*See rain.*)
Prince Edwards Island, 268, 269
Prince Rụ'pērt, 263
Prŏv ĭ-dĕnce, 180, 187, 188
Prunes, 51, 52, 53
Puzzles (*See games and puzzles.*)

Quebec (kwē-bĕk'), 267–268
Quincy (kwĭn'sĭ), Mass., 182

Railroads, 11, 34, 60–61, 63, 65, 66, 68, 86, 91, 99, 103, 107, 121, 122, 123, 124, 125, 126, 129, 130, 147, 152, 158, 160, 162, 163, 164, 167, 182, 184, 185, 191, 194, 200, 202, 205, 207, 209, 215, 216, 217, 218, 221, 222, 224, 225, 231, 234, 236, 237, 242, 246, 261, 262, 263, 266
  Map of, 243
Rain, 34, 50, 51, 52, 53, 55–56, 81, 84, 88, 92, 98, 101, 114, 133, 156, 161, 193, 245, 249, 262, 264
Raisin industry, 53
Ranches
  Cattle, 79–82
  And farms, of West, 48–57
  Sheep, 82–83
Raspberries, 50
Regions
  Central mixed-farming, 92–99, 142–146, 172, 200–204, 206–220
  Change from one to another, 91
  Coastal mixed-farming, 109–113
  Delmarvia mixed-farming, 160–162, 229–231
  Florida fruit and vegetable, 154–158
  Grazing and forage-crop, 75–88
  Highland mixed-farming, 146–154, 174–175, 176, 179, 192, 224–225
  Maritime and manufacturing, 176, 180–189, 235–237
  Mining and lumbering, 102–108, 173
  Northern mixed-farming, 99–102
  Southern mixed-farming, 113–117, 136–142
Reindeer, 248
Rice, 111–112, 115, 249
  Map of acreage, 90
Rĭch'mond, Va., 162, 165
Rhode Island (rōd), 180, 188, 239, 241
Rŏch'ĕs-tĕr, 200, 239
Rocky Mountains, 21, 30, 56, 61, 121
Rotation of crops, 94, 102, 112–113, 138–139
Rubber goods, manufacture of, 219, 235
Rust, of wheat, 101
Rye, 102, 150, 265
  Map of acreage, 90

Săc'rà-mĕn'tō, 68
Salmon fisheries, 36, 245
Salt, 41
Salt Lake City, 38, 39, 66
Sä-mō'an Islands, 257
Săn Ăn-tō'nĭ-ō, 130–131
San Diego (dē-ā'gō), 66
Sand pan, work with, 43, 48, 58, 69, 133
Săn Frăn-cĭs'cō, 63–65, 67, 239
Săn Juan (hwän), 254
Săs-kătch'ē-wän, 264, 265
Sà-văn'nàh, 158, 166, 167
Sawmills, 34, 70, 107, 117, 139–140, 152, 163, 206
Scales, on maps, 17, 23, 133
Scattered American lands, 244–257
  Map of, 250
Scrăn'ton, 193–194
Scrapbook, 48, 58
Seasons, lengths of growing, 85, 98, 101, 110, 114, 148, 175, 247
Sē-ăt'tle, 48, 62, 66, 67, 239
Seward (sū'ärd), 246
Sheep, 58, 77, 82, 87, 151, 180, 218, 241
  Map of distribution, 82
  Ranches, 82–83
  Shearing, 82–83
Shoes (*See boots and shoes.*)
Sĭ-ĕr'rà Nē-vä'dà Mountains, 40, 55
Silage, 93, 102, 175, 206, 214
  Map of tonnage, 175
Silk, manufacture of, 194, 236
Silver, 41, 242, 261, 263
Slaughtering (*See meat-packing.*)
Smelting, 39
Sorghum, 86, 113, 139
South Căr-ō-lī'nà, 138, 139, 159, 166, 239, 240, 242
South Dà-kō'tà, 99, 101, 239, 241
Southeastern United States, 135–169, 240
  Map of, 134
Southern mixed-farming region, 113–117, 136–142
Spō-kāne', 48, 61, 66
Springfield, Mass., 188
States (*See individual names.*)
  Leading crops of different, 241
  Lumber production, 242
  Population and area of, 29, 239
  Value of manufactures, 241
  Value of mineral products, 241–242
St. Lou'ĭs, 120, 123–125, 239
St. Law'rence River, 266, 270
St. Mary's River, 195, 196
Steel (*See iron and steel.*)
Stock farming, 94
Strawberries, 156, 159, 230
Streams, work of, 40, 46, 109, 153, 193, 222, 261
Sugar
  Beets, 57, 83, 84, 86, 91
    Map of acreage, 85
  Cane, 109–111, 249, 255
    Map of acreage, 85
  Refining of, 14, 130, 187, 233–234
Sû-pē'rĭ-or, Wis., 102
Swains Island, 257
Swine, 94, 98, 109, 139, 143, 147, 150, 157, 241
  Map of distribution, 89
Sỹr'à-cūse, 200

Tă-cō'mà, 62–63, 66, 68
Tăm'pà, 166, 167
Tĕn-nĕs-see', 144–145, 145–146, 147–149, 163–164, 239, 241, 242
Tĕx'às, 79, 81, 82, 83, 86, 87, 111, 113, 114, 115, 116, 117, 120, 130–132, 239, 240, 241, 242
Textiles, 180, 182, 236
Tobacco, 142, 144–145, 148, 150, 157, 160, 162, 165, 167, 175, 241, 256–257
  Map of acreage, 90
Tō-lĕ'dō, 203
Tomatoes, 156, 193, 229–230
Towns
  In the "black belt," 137
  Of central mixed-farming region, 97
  Of Delmarvia, 161
  In the grazing and forage-crop region, 86
  Of northern mixed-farming region, 99
  Oil, 118–119
  Ore-mining, 104
  Sawmill, 107
  Short lived, 69–70
  That change, 70
Trade (*See discussion of, in connection with different cities.*)
Trĕn'ton, 235
Truck farming, 54, 98, 109, 139, 154–156, 158–160, 162, 175, 178, 192–193, 229–230
Turpentining, 140–141, 157
Tutuila (tụ-tụ-ē'lä), 257

United States
  Compared with Canada, 271
  Glimpses of, 1–29
  Map of, 24–25
  Northeastern, 172–237
  Southeastern, 135–169
  Summary, 238–243
  Western, 30–73
  Western Interior, 75–134
Ū'tạh, 39, 41, 47, 57, 66, 84, 239, 241

Valley of California, 54
Văn-cou'ver, 259, 262–263

Vegetables, 51, 54, 98, 109, 150, 154–156, 158–160, 175, 178, 193, 229–230
Map of acreage, 136
Vĕr-mŏnt′, 174, 179, 239, 241
Vĭc-tōr Ĭ-å, 259, 263
Villages (*See towns.*)
Virginia (vĕr-jĭn′Ĭ-å), 159, 160–162, 165, 166, 167, 239, 241, 242
Virgin Islands (vĕr′jĭn), 257

Wāke Island, 257
Washington, 34, 35, 36, 37, 48, 50, 51, 62–63, 66, 67, 101, 106, 115, 239, 241, 242
Washington, D. C., 225–226, 239
Weather, and
Bathing beaches, 211
Corn-land work, 92
Cotton, 114
Curing hay, 192
Grape harvest, 53
Harvesting alfalfa, 84
Harvesting cranberries, 176–177
Harvesting peanuts, 161
Harvesting rice, 111
Harvesting sugar-cane, 110
Logging, 106
Pasturage, 80–81
Retting hemp, 145
Wheat-land work, 101
Winter, in Florida, 158
Work with tobacco, 144
Wee-haw′ken, 11, 235
Western Interior, 75–134, 240
Map of, 76
Western United States, 30–73, 238, 240
Map of, 31
West Virginia, 239, 241, 242
Wheat, 51, 54, 92, 93, 94, 98, 99–101, 102, 143, 147, 150, 192, 206, 240, 247, 264
Maps of acreage, 88, 89
White Mountains, 174
Wilkes-Barre (wĭlks′băr′Ĭ), 194
Wĭl-lăm′ĕtte Valley, 48, 51
Wil′ming-ton, Del., 231
Wilmington, N. C., 159, 166
Winds, 55, 61, 80, 81, 84, 86, 101, 102, 207, 247, 249, 255
Wĭn′nĭ-pĕg, 259, 266
Wĭs-cŏn′sĭn, 206–209, 239, 240, 241, 242
Wolves, 81
Woodlands (*See forests.*)
Wool, 82, 187
Wў-ō′mĭng, 47, 77, 80, 239, 241

Youngs′town, 218, 219–220
Yu̯′kŏn, 263

& CO